Entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden

Abhandlung
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Zusammenfassung

Im Rahmen der vorliegenden kumulativen Dissertation wurden entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden beleuchtet, um einen Beitrag zu einem besseren Verständnis der komplexen Entwicklung in der Adoleszenz zu leisten. In diesem Zusammenhang erfolgte im ersten, epidemiologischen Teilprojekt eine systematische Literaturübersicht zu den Prävalenzen psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen bis 25 Jahren auf der Basis epidemiologischer Studien des Zeitraums von 1987 bis 2004. Weiter wurden in den folgenden zwei empirischen Teilprojekten auf der Basis von einer für den Kanton Zürich repräsentativen Längsschnittstudie die Entwicklungsverläufe von internalisierenden Problemen und Selbstwert sowie von problematischem Substanzkonsum über drei Messzeitpunkte vom Jugendalter bis ins junge Erwachsenenalter (bis 25 Jahre) analysiert.

Im Rahmen der Literaturübersicht zeigte sich, dass mindestens jede siebte heranwachsende Person von psychischen Störungen mit Beeinträchtigung der Funktionstüchtigkeit betroffen ist, mit unterschiedlichem Verlauf verschiedener psychischer Störungen für die beiden Geschlechter. Von subklinischen internalisierenden Problemen sind sogar rund 30 Prozent der Jugendlichen mit einem starken Zusammenhang zum Selbstwert tangiert, bei weiblichen Jugendlichen mit einem sehr starken Zusammenhang. Von problematischem Substanzkonsum ist bis zum jungen Erwachsenenalter fast die Hälfte aller jungen Erwachsenen betroffen, begleitet von externalisierenden Verhaltensproblemen und problemmeidendem Verhalten.

Für die Behandlung und Prävention klinischer Störungen und subklinischer Probleme im Jugendalter sind altersspezifische Methoden wichtig. In der Kindheit und frühen Adoleszenz ist ein Fokus auf wahrgenommenes elterliches Erziehungsverhalten empfehlenswert, bei älteren Heranwachsenden sollten jedoch schulbezogene Faktoren und Peerbeziehungen stärker im Zentrum stehen. Bei weiblichen Jugendlichen wird bei der Behandlung und Prävention ein zusätzlicher Fokus auf internalisierende Probleme und einen tiefen Selbstwert empfohlen. Bei problematischem Substanzkonsum sollte hingegen unabhängig vom Geschlecht die Schwerpunktsetzung bei externalisierenden Verhaltensproblemen und problemmeidendem Verhalten liegen. Für das weitere vertiefte Verständnis von entwicklungspsychopathologischen Faktoren sind zusätzliche Studien von Interesse, speziell mit einem Fokus auf kompensatorische und protektive Faktoren.

Abstract

This dissertation intended to shed further light on developmental and psychopathological factors in order to contribute to a better understanding of the complexity of adolescence. First, a review based on epidemiological studies published between 1987 and 2004 analysed the prevalence of mental disorders in children, adolescents, and young adults up to the age of 25. Furthermore, two empirical projects based on a representative longitudinal sample from the canton of Zurich studied developmental trajectories of internalising problems and self-esteem as well as problematic substance use at three times from adolescence to young adulthood up to the age of 25.

According to the review, at least one in seven young people was identified as suffering from mental-health problems including deficits in global psychosocial functioning. Different developmental characteristics of various mental disorders were apparent in the two genders. Sub-clinical internalising problems affect 30 per cent of the adolescents and have a strong association with self-esteem, particularly in females. Problematic substance use was even more prevalent; nearly half of the young adults were affected. It was accompanied by externalising problem behaviour and avoidant coping.

Treatment and prevention of clinical symptoms and sub-clinical problems should be based on age-specific approaches. In childhood and early adolescence a focus on perceived parental behaviour is suggested, whereas in older adolescents school-related factors and peer relationships should become crucial. Furthermore, there should be an additional focus on internalising problems and low self-esteem in female adolescents. Independently of gender, interventions in problematic substance use require a focus on externalising behavioural problems and avoidant coping in adolescents and young adults. For a better understanding of developmental psychopathological factors, further studies should focus particularly on compensatory and protective factors.

Danksagung

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Die Daten der vorliegenden Dissertation stammen teilweise aus der Zürcher Adoleszenten Psychopathologie und Psychologie Studie (ZAPPS), welche von Herrn Prof. Hans-Christoph Steinhausen als Projektleiter und Frau Dr. phil. Christa Winkler Metzke als zentrale wissenschaftliche Mitarbeiterin über mehrere Jahre durchgeführt wurde. Ihnen und den beteiligten Jugendlichen sei ebenfalls herzlich gedankt. Ein weiterer Dank für die interessante Zusammenarbeit geht an die zwei ehemaligen Lizentiandinnen Frau lic. phil. Yvonne Weber Häner und Frau lic. phil. Annina Heimgartner.

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Inhaltsverzeichnis

1. Einleitung

Bei der vorliegenden Arbeit handelt es sich um eine kumulative Dissertation mit dem Titel „Entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden“, welche in einen epidemiologischen (1. Teilprojekt: Kapitel 2) und einen empirischen Teil (2. und 3. Teilprojekt: Kapitel 3 bis 6) eingeteilt werden kann. Auf die Thematik der Entwicklungspsychopathologie wird im Unterkapitel 1.2. weiter eingegangen. Der Begriff „Faktoren“ wird im Titel bewusst allgemein gehalten. Weitere Erläuterungen dazu folgen im Unterkapitel 1.3. Risiko- und Schutzfaktoren. Mit „Verläufen“ sind Entwicklungsverläufe gemeint. Unter Heranwachsenden werden im Allgemeinen Kinder, Jugendliche und junge Erwachsene (bis 25 Jahre) verstanden. Im empirischen Teil wurde der Fokus aufgrund des Studiendesigns auf die Adoleszenz und das junge Erwachsenenalter gelegt.

Im Rahmen einer allgemeinen Einleitung werden wichtige Aspekte der Adoleszenz und der Entwicklungspsychopathologie sowie Risiko- und Schutzfaktoren der Adoleszenz beleuchtet. Anschliessend werden die Ziele der Arbeit und das dazu gehörige Vorgehen erläutert. Weiter wird kurz auf die statistischen Methoden eingegangen und die verwendeten Daten beschrieben. Abschliessend folgt eine Übersicht über die im Rahmen dieser Dissertation erstellten Manuskripte, die bereits publiziert sind oder zur Publikation in „peer-reviewed“ Fachzeitschriften eingereicht wurden. Anschliessend an diese Kapitel folgt eine allgemeine Diskussion.

1.1. Adoleszenz

Entwicklungspsychologisch verbindet die Adoleszenz die Kindheit und das Erwachsenenalter. Jugendliche sind in dieser Zeitspanne keine Kinder mehr aber auch noch keine Erwachsene. Die Adoleszenz ist geprägt von grossen biologischen, geistigen und psychischen Veränderungen, beispielsweise in der körperlichen Entwicklung inklusive weiterer Hirnreifung und hormonellen Veränderungen. In diesem faszinierenden Entwicklungsfenster zwischen Kindheit und Erwachsenenalter werden Jugendliche in der Regel eigenständiger und deren Peerbeziehungen zunehmend wichtiger. Weiter finden in dieser Entwicklungsperiode soziale und situative Veränderungen statt (Cicchetti & Rogosch, 2002; Paus, Keshavan, & Giedd, 2008; Steinhausen, 2006a).

In der Adoleszenz stehen zentrale Entwicklungsaufgaben im Mittelpunkt, wie der Aufbau und Erhalt neuer Beziehungen zu gleich- und gegengeschlechtlichen Peers, Adaption an die Geschlechtsrolle, Umgang mit körperlichen Veränderungen, Streben nach emotionaler Unabhängigkeit von den Eltern und anderen Erwachsenen, Vorbereitung für Partnerschaft und Familie, Beginn und Planung der beruflichen Laufbahn, Entwicklung von Werten und Normen des eigenen, sozial verantwortungsvollen Verhaltens (Cicchetti & Rogosch, 2002; Steinhausen, 2006a). Jugendliche sind in der Adoleszenz somit auch bei normaler Entwicklung grossen Veränderungen unterworfen. Diese Veränderungen können kurz- oder auch längerfristig zu Fehlanpassungen wie beispielsweise internalisierende Probleme, tiefer Selbstwert oder problematischen Substanzkonsum führen. Mehr oder weniger grosse Turbulenzen im Laufe der Adoleszenz sind normal. Einige Jugendliche meistern die in der Adoleszenz anstehenden Entwicklungsaufgaben relativ gut und andere bilden länger dauernde Fehlanpassungen aus. Diese Thematik führt zur Entwicklungspsychopathologie, die im folgenden Unterkapitel angesprochen wird.

1.2. Entwicklungspsychopathologie

Die Entwicklungspsychopathologie ist ein noch verhältnismässig junger wissenschaftlicher Zweig, der in den 1970er Jahren aus der Kombination einer Entwicklungs- und einer klinischen Perspektive entstand (Cicchetti, 1984; Petermann, Kusch, & Niebank, 1998; Rutter & Sroufe, 2000). Gemäss Sroufe und Rutter (1984) grenzt sich die Entwicklungspsychopathologie aufgrund des Entwicklungsaspekts von den Disziplinen der Psychopathologie, der Psychiatrie und auch von der klinischen Kinderpsychologie ab. Nach Petermann, Kusch und Niebank (1998) hat sich in den letzten Jahren eine Definition der Entwicklungspsychopathologie von Sroufe und Rutter (1984) etabliert: Demnach beschäftigt sich die Entwicklungspsychopathologie mit den Ursachen und dem Verlauf individueller Muster fehlangepassten Verhaltens. Dies findet unabhängig statt vom Alter bei Störungsbeginn, den einzelnen Ursachen und Veränderungen im beobachtbaren Verhalten sowie der Komplexität der Faktoren, welche an der Entwicklung beteiligt sind.

Cicchetti und Toth (2009) nennen die Beleuchtung von Zusammenhängen biologischer, psychologischer und gesellschaftlicher Aspekte normaler und abweichender Entwicklung als übergeordnetes Ziel der Entwicklungspsychopathologie. Hieraus resultieren folgende wichtigste Forschungsschwerpunkte der Entwicklungspsychopathologie: Epidemiologische Studien, teilweise inklusive der Erfassung von Komorbiditäten, das Gewinnen eines Verständnis für Kausalbeziehungen, die Skizzierung eines Entwicklungskonzept sowie Verlaufsmuster normaler und abweichender Entwicklung und deren Korrelate, d.h. Risiko- und Schutzfaktoren, sowie Diagnostik, Prävention und Intervention. Von Interesse ist hierbei, weshalb einige Individuen erkranken und andere nicht, und welche Faktoren mit einer Erkrankung im Sinn von Risiko- und Schutzfaktoren verbunden sind. Beispielsweise kann ein Geschwisterkind eines betroffenen Kindes mit ähnlichen Belastungsfaktoren gesund bleiben. Mit dieser Thematik ist auch die Frage verbunden, welche Massnahmen zu einer Reduktion von Krankheiten ergriffen werden können (Cicchetti & Rogosch, 2002; Cicchetti & Toth, 2009; Petermann et al., 1998; Rutter & Sroufe, 2000; Steinhausen, 2006a; Steinhausen & Winkler Metzke, 2001a, 2001b).

Im Gegensatz zu den 1970er und 1980er Jahren ist heutzutage in der psychologisch-psychiatrischen Versorgung von Kindern und Jugendlichen eine Entwicklungsperspektive etabliert, die auf die oben genannten Aspekte eingehen kann (Rutter, Kim-Cohen, & Maughan, 2006; Rutter & Sroufe, 2000). Eine frühzeitige Diagnostik, multimodale Behandlung und Prävention im Kindes- und Jugendalter sind erforderlich, um einer Chronifizierung eines maladaptiven Verhaltens und Entwicklungsverlaufs wie beispielsweise chronische psychische und körperliche Erkrankungen angemessen entgegen wirken zu können. Dabei haben sich Schulungsprogramme für jugendliche Patient/innen als effektiv erwiesen (Petermann, Koch, & Hampel, 2006). Aufgrund der Entwicklung in den letzten Jahrzehnten stehen für die Diagnostik und weiterführende Forschung eine grosse Auswahl an Fragebögen, Interviews, sowie Verhaltensbeobachtungs- und psychometrischer Instrumente zur Verfügung, bei welchen häufig eine gute Evidenz ihrer Reliabilität und Validität besteht (Petermann, Schüssler, & Glaesmer, 2008; Rutter & Sroufe, 2000). Hingegen kamen im Rahmen empirischer Arbeiten und Publikationen mit diagnostischem Schwerpunkt vergleichsweise selten klassifikatorisch-diagnostische

Interviews sowie Fremdbeurteilungsverfahren zum Einsatz (Petermann et al., 2008). Weitere Forschung ist im Bereich der Entwicklungspsychopathologie nach wie vor unabdingbar. In Zukunft sind eine interdisziplinäre Perspektive und Mehrebenen-ananlysen wichtig, um die bestehende Komplexität des Forschungsgebietes bestmöglich zu erfassen. Ebenfalls sollten Forschungsergebnisse bezüglich normalen und maladaptiven Entwicklungsverläufen für die Prävention und die Behandlung von Jugendlichen stärker genutzt werden, mit vermehrtem Fokus auf biologische und psychologische Zusammenhänge, beispielsweise auch in Abhängigkeit von der individuellen Hirnreifung. Weiter sollten kulturelle Unterschiede stärker gewichtet und entsprechend als verschieden und nicht als defizitär betrachtet werden (Cicchetti & Gunnar, 2008; Cicchetti & Toth, 2009; Garcia-Coll, Akerman, & Cicchetti, 2000; Luthar & Brown, 2007).

1.3. Risiko- und Schutzfaktoren

Das menschliche Verhalten wird von Faktoren beeinflusst, die beim Individuum, seiner Umwelt und in deren Interaktion die individuelle Anpassung über den Entwicklungsverlauf fördern oder behindern. Dabei wurden im Sinn eines biopsycho-sozialen Wechselspiels folgende vier moderierende Faktoren definiert, welche innerhalb als auch ausserhalb eines Individuums liegen können: Risiko- und Vulnerabilitätsfaktoren, sowie kompensatorische und Schutzfaktoren. Risiko- und kompensatorische Faktoren werden generell wirksam, wie beispielsweise meidende Bewältigungsstrategien und positiver Selbstwert. Vulnerabilitäts- und Schutzfaktoren, wie beispielsweise eine wenig stützende respektive eine gute Beziehung zu einem Elternteil, können hingegen belastende Ereignisse oder Bedingungen benötigen um wirksam zu werden, wie beispielsweise Beziehungsprobleme der Eltern, für die Auslösung respektive Pufferung von Symptomen und Störungen. Die Unter-scheidung zwischen diesen vier moderierenden Faktoren wird in der Forschung und der Literatur hingegen selten so präzis gehandhabt. Häufig wird lediglich zwischen Risiko- und protektiven Faktoren unterschieden. Dies wird vermutlich noch durch den Umstand gestützt, dass diese Faktoren variabel sind und so in verschiedenen Situationen unterschiedliche Wirkungen zeigen können. Weiter sind anhin mehr Forschungsresultate über Risiko- als über protektive Faktoren bekannt. Dabei werden biologische, psychosoziale, soziokulturelle sowie Lebensereignisse und

situative Faktoren unterschieden, mit zusätzlicher Unterteilung der protektiven Faktoren in personelle, familiäre und extrafamiliäre soziale Ressourcen (Cleveland, Feinberg, Bontempo, & Greenberg, 2008; Luthar, 1991; Petermann et al., 1998; Rutter & Sroufe, 2000; Steinhausen, 2006a, 2006b; Steinhausen & Winkler Metzke, 2001a; Winkler Metzke, 1999).

Allgemein wird zwischen Vulnerabilität und Resilienz unterschieden. Resilienz (Widerstandsfähigkeit) wird als die positive Adaptionsfähigkeit eines Individuums an widrige Umstände sowie als interaktives, dynamisches Konzept verstanden und steht immer mehr im Interesse der Forschung. Die gleichen Risiko- und Schutzfaktoren können verschiedene Wirkungen zeigen. Deshalb kann Resilienz nicht wie ein stabiles Persönlichkeitsmerkmal erfasst werden, sondern erfordert einen Fokus auf die Prozesse der zugrunde liegenden inter- und intraindividuellen Unterschiede im Sinne von Zeit überdauernden Entwicklungsverläufen (Cicchetti & Rogosch, 2002; Cicchetti & Toth, 2009; Kim-Cohen, 2007; Luthar, 1991; Luthar, Cicchetti, & Becker, 2000; Luthar & Zigler, 1991; Petermann et al., 1998; Rutter, 2006; Rutter & Sroufe, 2000; Steinhausen, 2006a, 2006b; Steinhausen & Winkler Metzke, 2001a; Winkler Metzke, 1999). Als relevante Faktoren sind soziale, personenbezogene sowie umweltbezogene Risiken bekannt, beispielsweise Lebensereignisse, chronische Belastungen, Bewältigungsstrategien, selbstbezogene Kognitionen, Qualität des sozialen Netzwerks, widrige familiäre Bedingungen und wahrgenommenes elterliches Erziehungsverhalten (Ihle, Esser, Schmidt, & Blanz, 2002; Steinhausen, 2006a, 2006b; Winkler Metzke & Steinhausen, 2002). Für detailliertere Angaben sei auf die folgenden Kapitel verwiesen.

Forschungsbasierte Erkenntnisse in Zusammenhang mit den beschriebenen Faktoren stellen eine wichtige Grundlage für die Prävention, Früherkennung und Behandlung psychischer Störungen im Kinder- und Jugendalter dar (Petermann et al., 1998). Luthar, Sawyer und Brown (2006) empfehlen für zukünftige empirische Forschungsprojekte die Konzentration auf im jeweiligen Kontext hervorstechende, durch Interventionen veränderbare sowie anhaltende Faktoren, beispielsweise stabile Beziehungen mit Erwachsenen. Weiter werden multidimensionale Studien mit Einbezug von Genetik, Neurobiologie sowie kulturelle Unterschiede empfohlen (Kim-Cohen, 2007). Zudem ist noch wenig bekannt, ob und wie anhand von Risikofaktoren

im Kindes- und Jugendalter psychische Störungen im Erwachsenenalter vorhergesagt werden können (Ihle et al., 2002). Für die Klärung dieser Frage sind sicher weitere Studien notwendig.

1.4. Ziele der Arbeit und Vorgehen

Die vorliegende Doktorarbeit beleuchtet entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden, um einen Beitrag zum besseren Verständnis der komplexen Entwicklung in der Adoleszenz zu leisten. Dazu wurden im ersten Teilprojekt (Kapitel 2), das heisst im epidemiologischen Teil, im Rahmen einer systematischen Literaturübersichtsarbeit die Prävalenzen für psychische Störungen bei Kindern, Jugendlichen und jungen Erwachsenen bis 25 Jahre auf Basis internationaler epidemiologischer Studien des Zeitraums 1987 bis 2004 analysiert. Dabei wurden unter entwicklungspsychopathologischen Gesichtspunkten speziell die Aspekte von Geschlecht und Alter sowie Punkt- und Lebenszeitprävalenzen erfasst (Eschmann, Weber Häner, & Steinhausen, 2007). Weiter wurden im Rahmen des empirischen Teils der Dissertation auf der Basis vorhandener Daten einer empirischen Zürcher Längsschnittstudie Analysen von Entwicklungsverläufen über drei Messzeitpunkte vom Jugendalter bis ins frühe Erwachsenenalter (bis 25 Jahre) durchgeführt. Im Rahmen dieser Analysen lag der Fokus auf zwei wichtigen Themenbereichen des Jugendalters im Verlauf über sieben Jahre: Internalisierende Probleme (Teilprojekt 2: Kapitel 3) sowie problematischer Substanzkonsum (Teilprojekt 3: Kapitel 4 bis 6). Hierzu wurden im zweiten Teilprojekt Analysen zu internalisierenden Problemen und dem Selbstwert durchgeführt. Ziel dieses Teilprojekts war in Anlehnung an die Personen-orientierte Modellierung von Nagin und Kollegen (Jones & Nagin, 2007; Jones, Nagin, & Roeder, 2001; Nagin, 1999, 2005; Nagin & Tremblay, 2005) die Modellierung von Entwicklungsverläufen internalisierender Problemen und des Selbstwerts bei Jugendlichen (Eschmann, Zimprich, Winkler Metzke, & Steinhausen, submitted-a). Im dritten Teilprojekt widmeten wir uns der Problematik von besorgniserregendem Substanzkonsum bei Jugendlichen. Unter problematischem Substanzkonsum wurden folgende Kriterien subsumiert: Wöchentlicher oder täglicher Tabakkonsum und/oder Alkoholkonsum, starkes oder problemorientiertes Trinken mit Ziel der Betrunkenheit und/oder drei- oder mehrfacher Cannabiskonsum im vorherigen Monat. Im Rahmen dieses

Teilprojekts wurden in einem ersten Schritt die Kontinuität, psychosoziale Korrelate sowie das Ergebnis von Alkoholkonsum und problematischem Substanzkonsum von der Adoleszenz bis ins junge Erwachsenenalter beleuchtet (Steinhausen, Eschmann, Heimgartner, & Winkler Metzke, 2008; Steinhausen, Eschmann, & Winkler Metzke, 2007). In einem zweiten Schritt wurde ein Modell des Entwicklungsverlaufs von problematischem Substanzkonsum und psychosozialen Korrelaten von der späteren Adoleszenz bis ins junge Erwachsenenalter modelliert (Eschmann, Zimprich, Winkler Metzke, & Steinhausen, submitted-b). Für die Modellierungen wurde das Statistik-programm SAS (Version 8) verwendet, für einsteigende und weiterführende Analysen das Statistikprogramm SPSS (Version 14).

1.5. Methoden der eigenen Studien

Die statistischen Analysen schliessen folgende Verfahren ein: Deskriptive Analyse epidemiologischer Studien über einen Zeitraum von 20 Jahren, Varianzanalysen, Regressionsanalysen, semi-parametrische gemischte Modelle sowie gemischte Modelle für binäre Daten. Die verwendeten empirischen Daten beruhen auf Selbstangaben von Jugendlichen im Rahmen der Zürcher Adoleszenten Psychologie und Psychopathologie Studie (ZAPPS).

In der Literaturübersicht wurde der Schwerpunkt auf kategoriale Einschätzungen gelegt, das heisst auf Diagnosen von psychischen Störungen nach den Kriterien von DSM-III (American Psychiatric Association, 1980), DSM-III-R (American Psychiatric Association, 1987) bzw. DSM-IV (American Psychiatric Association, 1994) oder ICD-0/-10 (Dilling, Mombour, & Schmidt, 1993; World Health Organization, 1990). In den empirischen Studien standen hingegen dimensionale mittels Fragebögen erfasste Einschätzungen im Zentrum, beispielsweise von den Adoleszenten selbst berichtete internalisierende und externalisierende Probleme, die mit den Fragebögen Youth Self Report (YSR) für Jugendliche (Achenbach, 1991; Steinhausen, Winkler Metzke, & Kannenberg, 1999) respektive dem Young Adult Self Report (YASR) für junge Erwachsene (Achenbach, 1997) erfasst wurden. Weitere Angaben zu den Daten werden im nachfolgenden Kapitel 1.6. erläutert.

Zahlreiche statistische Methoden und darauf basierende Statistikprogramme, die in der empirischen Forschung verwendet werden, müssen als Variablen-orientiert statt als Personen-orientiert eingeschätzt werden (Hedeker & Gibbons, 1994; Jones & Nagin, 2007; Long, 1997; Nagin, 2005; Nagin & Tremblay, 2005; Patefield, 2002; von Eye & Bergman, 2003). Aufgrund zu starken Aggregierungen empirischer Daten können falsche Schlussfolgerungen gezogen werden beziehungsweise relevante Informationen verloren gehen (Nagin, 2005; Nagin & Tremblay, 2005; von Eye & Bergman, 2003). In einer empirischen Studie können beispielsweise bei der Berechnung und Interpretation eines Mittelwerts oder eines gemittelten Verlauf wichtige Informationen bezüglich der Heterogenität einer Stichprobe verloren gehen. Eine detaillierte Erläuterung der Debatte über Variablen- versus Personen-orientierten statistische Methoden würde den Rahmen der vorliegenden Arbeit sprengen. Deshalb sei dazu auf die zitierte Literatur verwiesen.

Um dem Umstand der Daten- und Methodenvielfalt Rechnung zu tragen, wurden in der vorliegenden Dissertation zwei verschiedene statistische Methoden zur Modellierung von Längsschnittdaten angewendet. Dabei handelt es sich einerseits um die Modellierung semi-parametrischer Modelle in Anlehnung an Nagin und Co-Autoren (Jones & Nagin, 2007; Jones et al., 2001; Nagin, 1999, 2005; Nagin & Tremblay, 2005), um Entwicklungsverläufe internalisierender Probleme und des Selbstwerts bei Jugendlichen zu modellieren (Eschmann et al., submitted-a). Hierbei handelt es sich um einen gruppenbasierten Ansatz, bei welchem verschiedene Verlaufsgruppen, beispielsweise von internalisierenden Problemen und dem Selbstwert von Jugendlichen, modelliert werden können. Andererseits wurden gemischte Modelle für binäre Daten mit psychosozialen Korrelaten modelliert (Hedeker & Gibbons, 1994; Long, 1997; Patefield, 2002; SAS Institute Inc, 1999). Hierbei ging es um die Modellierung eines Entwicklungspfades von problematischem Substanzkonsum von der Adoleszenz bis ins junge Erwachsenenalter mit psychosozialen Korrelaten (Eschmann et al., submitted-b). Die verwendeten Fragebögen werden in den jeweiligen Kapiteln beschrieben.

1.6. Daten der empirischen Untersuchungen

Die in den empirischen Untersuchungen verwendeten Daten basieren ursprünglich auf einer Kohorte von Schülerinnen und Schülern im Alter von sechs bis 17 Jahren, 1994 im Kanton Zürich lebend. Bei dieser schulbasierten Kohorte handelte es sich um eine für den Kanton Zürich bezüglich der Merkmale Geschlecht, beteiligte Alterskohorten, Anteile von Stadt- und Landbevölkerung und Schultypen repräsentative Stichprobe. Diese Stichprobe stellte die Basis der ZESKAP dar, die Zürcher Epidemiologische Studie zur Kinder- und Adoleszenten-Psychopathologie. Eine vollständige Beschreibung der Stichprobenauswahl kann einer früheren Publikation entnommen werden (Steinhausen & Winkler Metzke, 2001a). Die vorpubertären Jugendlichen und Adoleszenten (Alter 11-17 Jahre) der ZESKAP Stichprobe (N=1110) stellten die Grundlage der längsschnittlichen Zürcher Adoleszenten Psychologie und Psychopathologie Studie (ZAPPS) dar. Neben einem epidemiologischen und längsschnittlichen Ansatz zielte die ZAPPS auf die Untersuchung von Bedingungen und Prozessen, welche der psychischen Gesundheit Heranwachsender förderlich sind oder zur Ausbildung psychiatrischer Störungen beitragen (Steinhausen & Winkler Metzke, 1997; Winkler Metzke & Steinhausen, 2002).

Die Kohorte von 1110 Jugendlichen wurde mittels multidimensionalen Screenings basierend auf verschiedenen Fragebögen, die bei drei Messzeitpunkten eingesetzt wurden (1994, 1997 und 2001), längsschnittlich untersucht. Anschliessend wurden strukturierte psychiatrische Interviews mit denjenigen Jugendlichen, die Werte oberhalb der Grenzwerte der einzelnen Screeninginstrumente erzielten, sowie mit einer Kontrollgruppe durchgeführt. Im Rahmen der Screeningphase reduzierte sich die Stichprobe, da einzelne Jugendliche während der Screening- und der Interview-phase aus der Stichprobe ausschieden, beispielsweise nach Verlassen der Schule. Eine grössere Anzahl Jugendlicher und speziell auch mehr männliche als weibliche Jugendliche schieden bei der Interviewphase im Vergleich zur Screeningphase aus der Studie aus.

Um mit einem vollständigen Datenset mit allen Fragebögen und Interviews zu arbeiten, wurde eine für die lokale Bevölkerung repräsentative Längsschnitt-stichprobe ermittelt. Diese endgültige Stichprobe umfasste 593 Jugendliche mit

Daten von drei Erhebungszeitpunkten (1994, 1997 und 2001). Das mittlere Alter dieser längsschnittlichen Stichprobe betrug zu den drei Erhebungszeitpunkten 13.6 (SD = 1.6), 16.6 (SD = 1.6) und 20.2 (SD = 1.7) Jahre und umfasste 284 (47.9%) männliche und 309 (52.1%) weibliche Jugendliche. Diese 593 Jugendliche erwiesen sich als repräsentativ für die lokale Bevölkerung des Kantons Zürich bezüglich des Geschlechts (Chi^2 = 2.14, df = 1, p = n.s.) und zweijähriger Altersverteilung der 17-22 Jahre alten Jugendlichen (Chi^2 = 2.67, df = 2, p = n.s.). Diese Stichprobe wurde im Rahmen von verschiedenen Publikationen verwendet (Eschmann et al., submitted-a, submitted-b; Steinhausen, Bösiger, & Winkler Metzke, 2006; Steinhausen et al., 2008; Steinhausen et al., 2007; Steinhausen, Gavez, & Winkler Metzke, 2005; Steinhausen, Haslimeier, & Winkler Metzke, 2006; Steinhausen & Winkler Metzke, 2004, 2007) und stellte die Grundlage der im Rahmen dieser Dissertation verwendeten Daten dar.

1.7. Übersicht über die Manuskripte

In den folgenden Kapiteln werden die im Rahmen dieser Dissertation durchgeführten Teilprojekte mittels der daraus entstandenen Manuskripte dargestellt. Diese Kapitel wurden in der Originalsprache der bereits publizierten oder zur Veröffentlichung eingereichten Texte gehalten, d.h. in Deutsch und Englisch. Die Publikationsrechte der in „peer-reviewed“ Fachzeitschriften publizierten Artikel zur Publikation in der vorliegenden Dissertation wurden einzeln geklärt. Angaben dazu sind in der nachfolgend aufgeführten Übersicht vermerkt. Dabei handelt es sich um folgende bereits veröffentlichte oder zur Veröffentlichung eingereichte Manuskripte:

Teilprojekt 1: Manuskript 1:

Eschmann, S., Weber Häner, Y., & Steinhausen, H.-C. (2007). Die Prävalenz psychischer Störungen bei Kindern und Jugendlichen unter Berücksichtigung soziodemografischer Merkmale - Übersicht und Forschungsnotwendigkeiten. *Zeitschrift für Klinische Psychologie und Psychotherapie, 36*(4), 270-279.

→ Publikation mit freundlicher Genehmigung vom Hogrefe Verlag Göttigen (08.09.2009).

Teilprojekt 2: Manuskript 2:

Eschmann, S., Zimprich, D., Winkler Metzke, C., & Steinhausen, H.-C. (submitted-a). Adolescent Trajectories of Internalizing Problems and Self-Esteem.

→ Eingereicht bei: “Journal of Emotional and Behavioral Disorders“.

Teilprojekt 3: Manuskripte 3, 4, 5:

Steinhausen, H.-C., Eschmann, S., Heimgartner, A., & Winkler Metzke, C. (2008). Frequency, course and correlates of alcohol use from adolescence to young adulthood in a Swiss community survey. *BMC Psychiatry, 8*, 5.

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Steinhausen, H.-C., Eschmann, S., & Winkler Metzke, C. (2007). Continuity, psychosocial correlates, and outcome of problematic substance use from adolescence to young adulthood in a community sample. *Child Adolesc Psychiatry Ment Health, 1*(1), 12.

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Eschmann, S., Zimprich, D., Winkler Metzke, C., & Steinhausen, H.-C. (submitted-b). A developmental trajectory model of problematic substance use and psychosocial correlates from late adolescence to young adulthood.

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Eschmann, S., Zimprich, D., Winkler Metzke, C., & Steinhausen, H.-C. (submitted-a). Adolescent Trajectories of Internalizing Problems and Self-Esteem.

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2. Teilprojekt 1: Manuskript 1: Die Prävalenz psychischer Störungen bei Kindern und Jugendlichen unter Berücksichtigung soziodemografischer Merkmale: Übersicht und Forschungsnotwendigkeit1[1]

2.1. Zusammenfassung

Theoretischer Hintergrund: Die Bedeutung soziodemografischer Merkmale für die Prävalenz psychischer Störungen bei Kindern und Jugendlichen. Fragestellung und Methode: Es werden Zusammenhänge zwischen der Prävalenz psychischer Störungen bei Kindern und Jugendlichen und soziodemografischen Merkmalen auf der Basis epidemiologischer Studien des Zeitraumes 1987 bis 2004 analysiert. Ergebnisse: Die mittlere Periodenprävalenz beträgt ohne Berücksichtigung der Funktionstüchtigkeit 22 Prozent und mit Berücksichtigung der Funktionstüchtigkeit 16 Prozent. Bei Jungen wurden im Kindesalter und nur teilweise im Jugendalter höhere Prävalenzraten gefunden. Weibliche Jugendliche weisen insgesamt höhere Gesamtprävalenzraten auf als männliche Jugendliche. Im jungen Erwachsenenalter vollzieht sich eine Wiederangleichung der Prävalenzen. Tendenziell besteht in einigen Studien eine höhere Wahrscheinlichkeit für psychische Störungen in tiefen Sozialschichten. Schlussfolgerungen: Die Forschung sollte neben der Erforschung von Prävalenzen und Risikofaktoren den Fokus vermehrt auf einheitlichere Untersuchungsstandards richten.

2.2. Abstract

Background: The impact of socio-demographic characteristics on the prevalence of mental disorders of children and adolescents. Objectives and methods: Based on epidemiological studies that had been published between 1987 and 2004, this review analyzes associations between the prevalence of mental disorders in children and adolescents and socio-demographic characteristics. Results: The mean period prevalence without considering global psychosocial functioning amounts to 22 percent, and declines to 16 percent when considering deficits in global psychosocial

[1] Eschmann, S., Weber Häner, Y., & Steinhausen, H.-C. (2007). Die Prävalenz psychischer Störungen bei Kindern und Jugendlichen unter Berücksichtigung soziodemografischer Merkmale - Übersicht und Forschungsnotwendigkeiten. *Zeitschrift für Klinische Psychologie und Psychotherapie, 36*(4), 270-279.

functioning. Prevalence rates are higher in males than in females during childhood and in some studies also in adolescence. In female adolescents, prevalence rates are higher than in male adolescents. In young adulthood, prevalence rates tend to become more similar again. Some studies tend to show a higher probability for mental disorders in lower social class subjects. Conclusions: Besides the assessment of prevalence rates and their associations with risk factors, future research should increasingly focus also on more homogenous standards of assessment.

2.3. Einleitung

Die psychische Befindlichkeit von Kindern und Jugendlichen steht erst seit rund 50 Jahren im Fokus eines epidemiologischen Forschungsinteresses. Seither werden die psychische Gesundheit und psychische Auffälligkeiten von Kindern, Jugendlichen und jungen Erwachsenen sowie altersbedingte Veränderungen in der Prävalenz und im Verlauf psychischer Störungen mit unterschiedlichen Ansätzen systematisch untersucht (Cohen, Cohen, Kasen, Velez, Hartmark, Johnson et al., 1993; Brandenburg, Friedman & Silver, 1990; Links, 1983). Die Entwicklung spezifischer, auf die Kindheit und das Jugendalter ausgerichteter Klassifikationssysteme (Achenbach, 1995; Remschmidt & Schmidt 1977) sowie standardisierter Erhebungsinstrumente wie Fragebögen und strukturierte Interviews und die erweiterten Möglichkeiten der Datenverarbeitung haben die epidemiologische Forschung auch in diesem Altersbereich positiv stimuliert.

Die Ergebnisse epidemiologischer Untersuchungen zu psychischen Störungen bei Kindern und Jugendlichen seit den 60-er Jahren bis zum Ende der 80-er Jahre des letzten Jahrhunderts sind in verschiedenen Übersichtsarbeiten zusammengefasst worden (Bird, 1996; Brandenburg et al., 1990; Roberts, Attkisson & Rosenblatt, 1998; Links, 1983). In Studien, die vor 1970 mit sehr unterschiedlichen Methoden durchgeführt wurden, ergab sich eine mittlere Prävalenzrate von 15.4%, in Studien der 70er Jahre betrug sie 14.1%, und in den 80er Jahren belief sie sich auf 13.8% (Roberts et al., 1998). Die drei von Roberts et al. (1998) berichteten Studien nach 1990 ergaben eine mittlere Prävalenzrate von 26%.

Auch die epidemiologischen Erhebungen der letzten Jahrzehnte zeigen, dass ein beträchtlicher Teil der Kinder und Jugendlichen in irgendeiner Form psychisch beeinträchtigt ist (Angold & Costello, 1995; Canino, Shrout, Rubio-Stipec, Bird, Bravo, Ramirez et al., 2004; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Fombonne, 2002; Ihle & Esser, 2002; Roberts et al., 1998; Steinhausen, Winkler Metzke, Meier & Kannenberg, 1998; Verhulst, 1995). Eine beunruhigende Erkenntnis ist ferner die Tatsache, dass eine grosse Zahl von Kindern und Jugendlichen, die aufgrund psychischer Störungen eine Behandlung benötigten, keine angemessene Intervention erhalten (Costello, Egger & Angold, 2005; Flisher, Kramer, Grosser, Alegria, Bird, Bourdon et al., 1997; Owens, Hoagwood, Horwitz, Leaf, Poduska, Kellam & Ialongo, 2002).

In der vorliegenden Übersichtsarbeit der epidemiologischen Forschungsergebnisse aus den letzten 20 Jahren liegt der Fokus zunächst auf den Gesamtprävalenzraten psychischer Störungen im Kindes- und Jugendalter. Dabei werden die Ergebnisse epidemiologischer Studien zur Periodenprävalenz und zur Lebenszeitprävalenz psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen bis zum Alter von 25 Jahren dargestellt. Mit dieser Übersicht verbindet sich auch das Ziel, einen Beitrag zu der wiederholt geforderten Systematisierung der epidemiologischen Forschung zu psychischen Störungen im Kindes- und Jugendalter zu leisten (Bird, 1996; Brandenburg et al., 1990; Costello et al., 2005; Fombonne, 2002; Ihle & Esser, 2002; Links, 1983; Roberts et al., 1998).Ein weiterer Schwerpunkt der Analyse liegt bei der Frage nach der Bedeutung von Alter, Geschlecht, sozioökonomischem Status (SÖS) sowie Geschwisterposition im Zusammenhang mit psychischen Störungen bei Kindern und Jugendlichen.

2.4. Methoden

In die vorliegende Übersichtsarbeit wurden epidemiologische Studien der letzten 20 Jahre mit publizierten Gesamtprävalenzraten psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen unter Berücksichtigung soziodemografischer Merkmale einbezogen. Die Untersuchungen wurden von 1977 bis 2000 durchgeführt und zwischen 1987 und 2004 publiziert. Die Studien wurden mittels Suchabfragen in den nachfolgend aufgeführten Datenbanken identifiziert: Psyndex, Psychinfo,

PubMed, CSA-Datenbank Sociological Abstracts (ZB), SSCI, Psychwatch, ScienceDirect, Psycline, Cambridge Journals Online, Google.com.

Insgesamt wurden 24 Studien eingeschlossen, 21 Studien zur Einschätzung der Periodenprävalenz und 4 Studien für die Lebenszeitprävalenz. Im Rahmen einer Studie (Wittchen, Nelson und Lachner, 1998) wurden sowohl Perioden- als auch Lebenszeitprävalenzen berechnet. Mindestanforderungen für den Einschluss waren Diagnosestellungen nach den Kriterien von DSM-III (APA, 1980), DSM-III-R (APA, 1987) bzw. DSM-IV (APA, 1994) oder ICD-9/-10 (WHO, 1990; Dilling, Mombour & Schmidt, 1993), Angaben zur Prävalenz, zur Prävalenzperiode sowie zu den verwendeten diagnostischen Instrumenten. Aufgrund der Vielfalt kann im Rahmen dieses Artikels nicht auf die eingesetzten diagnostischen Verfahren näher eingegangen werden. Reine Screening-Studien ohne Prävalenzangaben wurden ausgeschlossen, während sowohl Studien mit einem Mehrphasen-Design (Screening und Interviews) als auch rein diagnostische Untersuchungen einbezogen wurden. Mehrheitlich werden 6-Monats-Prävalenzen berichtet; ansonsten liegen 1-, 3- bzw. 12-Monats-Prävalenzen vor. Für die Analysen der Bedeutung sozio-demografischer Merkmale wurden in der Regel Angaben zu Prävalenzraten verwendet. Wenn diese nicht vorhanden waren, wurden die in den Studien publizierten Odds Ratio (OR) einbezogen.

Prävalenzraten aus Untersuchungen, welche nur aufgeschlüsselt nach verschiedenen Informanten (Eltern, Kinder, Jugendliche, Lehrpersonen) publiziert wurden, werden entsprechend getrennt aufgeführt. Dies betrifft insgesamt fünf Studien (Breton, Bergeron, Valla, Berthiaume & Gaudet, 1999; Fergusson, Horwood & Lynskey, 1993; Puura, Almqvist, Tamminen, Piha, Räsanen, Kumpulainen et al., 1998; Shaffer, Fisher, Dulcan, Davies, Piacentini, Schwab-Stone et al., 1996; Verhulst, van der Ende, Ferdinand & Kasins, 1997). Einige Untersuchungen geben die Gesamtprävalenz psychischer Störungen unter Berücksichtigung der globalen Funktionsbeeinträchtigung an (Bird, Canino, Rubio-Stipec, Gould, Ribera, Sesman, et al., 1988; Canino et al., 2004; Fombonne, 1994; Shaffer et al., 1996; Simonoff, Pickles & Meyer, 1997; Verhulst et al., 1997). Bezüglich der soziodemografischen Merkmale wird bei fehlenden Gesamtprävalenzraten, aber vorhandenen Angaben zu Einzeldiagnosen auf diesen spezifischen Sachverhalt hingewiesen. In Längsschnitt-

studien entsprechen die Angaben zu verschiedenen Altersgruppen häufig den Altersbereichen zu den verschiedenen Erhebungszeitpunkten.

2.5. Ergebnisse

2.5.1. Periodenprävalenz

In Tabelle 1 sind 21 Studien dargestellt, welche Prävalenzraten für psychische Störungen bei Kindern, Jugendlichen und jungen Erwachsenen berichten. Sie beziehen sich auf variierende Prävalenzperioden im Bereich von einem bis zwölf Monaten. Die Arbeiten von Bird et al. (1988), Canino et al. (2004), Fombonne (1994), Shaffer et al. (1996), Simonoff et al. (1997) und Verhulst et al. (1997) beziehen ein Mass der globalen Funktionsbeeinträchtigung ein. Die Studien von Breton et al. (1999), Fergusson et al. (1993), Puura et al. (1998), Shaffer et al. (1996) sowie Verhulst et al. (1997) berichten nach Informanten (Fremd- und Selbstbeurteilung) getrennte Gesamtprävalenzraten. In diesen fünf genannten Studien wurden keine aus den verschiedenen Informationsquellen kombinierten Gesamtwerte publiziert.

Unter Berücksichtigung aller Werte ohne Berücksichtigung der Funktionsbeeinträchtigung ergibt sich eine grosse Bandbreite der Gesamtprävalenzraten für psychische Störungen bei Kindern, Jugendlichen und jungen Erwachsenen von 9.5% - 49.5%. Die höchste Prävalenz wurde im Community Survey in Puerto Rico (Bird et al. 1988) erhoben. Der Durchschnitt beträgt 22.0% für die gesamte Alterspanne von 3-24 Jahren (Fremd- und Selbsturteile einbezogen). Bei Berücksichtigung des Kriteriums der Funktionsbeeinträchtigung sinkt die mittlere Gesamtprävalenz auf 16.0% ab. Dieses Ergebnis beruht auf sechs Studien.

Tabelle 1: Anlage und Ergebnisse epidemiologischer Studien zur Periodenprävalenz psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen

Autoren	**Studie, Ort, Erhebungsjahr(e)**	**N***	**Alter in Jahren**	**Präva-lenz-Periode** (Monate)	**Klassi-fikation**	**Infor-man-ten**	**Prävalenzraten**			
							Total %**	**Altersgruppen** (in Jahren) %	**Geschlecht** %	**SÖS** %
1. Canino et al. (2004)	k.A., Puerto Rico, 2000	1897	4-17	12	DSM-IV	E, K	19.8 (16.4)	Alter per 10 Jahre: OR=1.4	OR=1.1	n.s.
2. Costello et al. (1996), Costello et al. (2003)	Great Smoky Mountains Study, USA, 1992-2000	1420	9-16	3	DSM-III-R DSM-IV	E,J	13.3	9/10: 19.5 11: 12.7 12: 8.3 13: 12.7 14: 9.7 15: 14.2 16: 12.7	w: 10.6 m: 15.8	k.A.
3. Goodman et al. (2002), Ford et al. (2003)	British Child and Mental Health Survey in 1999, England/Wales, 1999	10'438	5-15	1	DSM-IV ICD-10	E, K, L	9.5	5-7: 7.8 8-10: 8.6 11-12: 9.6 13-15: 12.2	w: 11.6 m: 7.4	k.A.
4. Angold et al. (2002)	Caring for Children in the Community Study, USA, k.A.	920 (4500)	9-17	3	DSM-IV	E	21.1	9: 26.4 12: 16.8 17: 31.2	w: 18.2 m: 24.1	k.A.
5. Esser et al. (1990), Esser et al. (1992), Esser et al. (2000), Ihle et al. (2000), Ihle & Esser (2002)	Mannheimer Kurpfalzerhebung, Deutschland, 1978-1995	399 356 340 321	8-25	6	ICD9/ ICD10	E,K,J		8: 16.2 13: 17.8 18: 16.0 25: 18.4	m:22.2/w:10.2 m:22.0/w:13.0 m:14.8/w:17.2 m:20.2/w:16.7	k.A.
6. Breton et al. (1999)	Québec Child Mental Health Survey, Canada, 1992	2400	6-14	6	DSM-III-R	E,K,J,L	19.9E 15.8J	6-8: 15.3K, 23.8E 9-11: 14.6K, 19E 12-14: 17.5J, 17.2E	k.A.	k.A.

Autoren	Studie, Ort, Erhebungsjahr(e)	N*	Alter in Jahren	Prävalenz-Periode (Monate)	Klassifikation	Informanten	Prävalenzraten			
							Total %**	**Altersgruppen** (in Jahren) %	**Geschlecht** %	**SÖS** %
7. Steinhausen et al. (1998)	ZESCAP/ZAPPS, Zürich, Schweiz, 1994	379 (1964)	7-17	6	DSM-III-R	E, J	22.5	6-9: 31.3 10-13: 25.4 14-17: 12.8	m:34.7/w:31.7 m:34.0/w:16.0 m:15.8/w:8.6	U>M bei Überängstlichkeit
8. Puura et al. (1998)	k.A., Finnland, 1989	278 (3397)	8-9	3	DSM-III-R	E, K	15.1E 14.9K	k.A.	m:23.7/w: 5.3E m:20.5/w:8.7K	k.A.
9. Wittchen et al. (1998)	EDSP Studie, Deutschland, 1995	3021	14-24	12	DSM-IV ICD-10	E	17.5	Höhere Altersgruppe > OR	m:10.3/w:24.5	U: OR= 1.7
10. Verhulst et al. (1997)	k.A., Rotterdam, Niederlande, 1993	780 (2227)	13-18	6	DSM-III-R	E, J	21.5J (15.4) 21.8E (15.3)	Zwei Altersgruppen 13-15 vs. 16-18: n.s.	Angaben zu Einzeldiagnosen	k.A.
11. Simonoff et al. (1997)	Virginia Twin Study of Adolescents Behavioral Development, Virginia, USA, k.A.	2762	8-16	3	DSM-III-R	E, K	41.3 (14.2)	Sign. Zunahme mit Alter	m: (14.1) w: (14.3)	k.A.
12. Shaffer et al. (1996)	MECA Study , USA, k.A.	1285	9-17	6	DSM-III-R	E, K	32.2J (19.6) 30.3E (19.2)	k.A.	k.A.	k.A.
13. Anderson et al. (1987), McGee et al. (1990), Feehan et al. (1994), Newman et al. (1996)	Dunedin Multidisciplinary Health and Development Study, Dunedin, New Zealand, 1983-1994	792 943 1008 957	11-21	12	DSM-III, DSM-III-R	E, K, J, L		11: 17.6 15: 22.0 18: 37.4 21: 40.4	m:w = 1.7:1 m:18.2/w:25.9 k.A. m:38.6/w:42.4	k.A.
14. Fombonne (1994)	Chartres Study, Frankreich, 1987	217 (2441)	8-11	3	ICD-9	E,L	k.A. (12.4)	8-9: (13.1) 10-11: (11.6)	m: (15.0) / w: (9.5)	k.A.

Autoren	Studie, Ort, Erhebungsjahr(e)	N*	Alter in Jahren	Prävalenz-Periode (Monate)	Klassifikation	Informanten	Prävalenzraten			
							Total %**	**Altersgruppen** (in Jahren) %	**Geschlecht** %	**SÖS** %
15. Costello et al. (1988), Costello et al. (1993)	k.A., Pittsburgh / Pennsylvania, USA, 1984/85	300 278 (789)	7-11 12-18	12 6	DSM-III DSM-III-R	E, K, J	22.0 26.6	k.A.	k.A.	k.A.
16. Velez et al. (1989), Cohen et al. (1993)	New York Child Longitudinal Study , New York, USA, 1983/1985	776 734	9-18 (1983) 11-20 (1985)	12	DSM-III-R	E, K, J	17.7 15.8	9-12: 19.4 13-18: 16.4 11-14: 15.6 15-20: 16.0	k.A.	U>M für extern. Störungen und Trennungsangst
17. Fergusson et al. (1993)	Christchurch Health and Development Study, New Zealand, 1977-92	986	15	6	DSM-III-R	E, K	22.1K 13.0E	k.A.	m: ca. 20% w: ca. 33%	k.A.
18. Boyle et al. (1987), Offord et al. (1987), Offord et al. (1989), Offord et al. (1992)	Ontario Child Health Study, Ontario, Canada, 1983/1987	1617 1172	4-12 (1983) 8-16 (1987)	6	DSM-III	E, K, J, L	18.1	4-11: 7.5E 9.9K,L 12-16: 7.9E 14.8K,L	m:7.2E, 13.4L w:7.8E, 6.4L (4-11 J.) m:8.1E, 12.4K w:7.7E, 17.1K (12-16 J.)	tiefe Einkommensschicht: OR=2.34
19. Jeffers & Fitzgerald (1991)	k.A., Dublin, Irland, 1990	190 (2029)	9-12	3	ICD-9	k.A.	25.4	k.A.	k.A.	k.A.
20. Bird et al. (1988)	k.A., Puerto Rico, USA, 1985/86	386 (777)	4-16	6	DSM-III	E, K, L	49.5 (18.4)	k.A.	m>w	U>M/O
21. Weyerer et al. (1988)	Oberbayerische Feldstudie, Deutschland, 1977/78	358	3-14	3 12	ICD 9	E, K	18.4 20.7	k.A.	k.A.	k.A.

Anmerkungen: N*: Angaben in Klammern betreffen die Screening-Stichprobe; Total%**: Angaben in Klammern betreffen Prävalenzwerte, die ein Mass der globalen Funktionsbeeinträchtigung miteinbeziehen; SÖS=Sozioökonomischer Status (O=Oberschicht, M=Mittelschicht, U= Unterschicht); OR=Odds Ratio, E=Eltern, K=Kind, J= Jugendliche, L=Lehrer, J.=Jahre, m=männlich, w=weiblich; k.A.=keine Angabe

Die Gesamtprävalenzraten in verschiedenen Altersgruppen fallen unterschiedlich aus. Während nur in wenigen Studien eine Zunahme der Gesamtprävalenzraten vom Kindes- bis ins Jugend- und das junge Erwachsenenalter nachgewiesen wurde (Newman, Moffitt, Caspi, Magdol, Silva & Stanton, 1996; Offord, Boyle, Racine, Fleming, Cadman, Blum, et al., 1992; Simonoff et al., 1997), weisen andere Studien mit steigendem Alter eine Abnahme auf (Breton et al., 1999 im Elternurteil; Cohen et al., 1993; Fombonne, 1994; Steinhausen et al., 1998). Variierende Gesamtprävalenzraten mit zunehmendem Alter berichten Angold, Erkanli, Farmer, Fairbank, Burns, Keeler, et al. (2002), Breton et al. (1999) im Selbsturteil, Costello et al. (2003) sowie Ihle und Esser (2002). Die Altersstufe knapp vor der Adoleszenz wird insgesamt als am wenigsten auffällig beschrieben.

Auf das Geschlecht bezogen werden in den Studien einheitlichere Resultate sichtbar. In der Untersuchung von Fombonne (1994) ist bei den 6-11-Jährigen die Prävalenzrate bei den Jungen deutlich höher. Analog berichten Angold et al. (2002), Bird et al. (1988), Costello et al. (2003), Puura et al. (1998) und Steinhausen et al. (1998) bei Mädchen signifikant niedrigere Gesamtprävalenzraten für psychische Störungen im Kindes- und Jugendalter als bei Jungen (Alterspanne 9-17 Jahre). Das gleiche Bild zeigt sich in der Studie von Ihle und Esser (2002) für Kinder und Jugendliche und wieder im jungen Erwachsenenalter (25 Jahre). Im Alter von 18 Jahren hingegen ist die Gesamtprävalenzrate der jungen Frauen höher (Esser, Schmidt, Blanz, Fätkenheuer, Fritz, Koppe et al., 1992; Ihle & Esser, 2002). Newman et al. (1996) berichten für das Alter von 15 bis 21 Jahren höhere Raten bei Mädchen. Wenn die Untersuchungsstichprobe wie bei Wittchen et al. (1998) das Jugend- und das frühe Erwachsenenalter umfasst (14-24 Jahre), ist die Gesamtprävalenz bei den Frauen deutlich höher.

Die wenigen Angaben zum Einfluss des sozioökonomischen Status auf das Vorliegen einer psychischen Störung reichen von keinem Einfluss (Canino et al., 2004) über eine höhere Prävalenz bei Kindern und Jugendlichen aus der Unterschicht (Boyle, Offord, Hofmann, Catlin, Byles, Cadman et al., 1987; Offord et al., 1992; Wittchen et al., 1998) bis zu Befunden einzelner Diagnosen bei denen höhere Prävalenzraten in der Unterschicht gefunden wurden (Steinhausen et al., 1998; Velez, Johnson & Cohen, 1989). Kinder und Jugendliche aus der Unterschicht

wiesen bei generalisierten Angststörungen höhere Prävalenzwerte (4.3%) auf als Angehörige der Mittelklasse (1.2%) (Steinhausen et al., 1998). Ein tiefer SÖS erwies sich in der Studie im Staat New York als statistisch signifikanter Risikofaktor für alle externalisierenden Störungen sowie für Trennungsangst (Velez et al., 1989).

Die Geschwisterposition wird nur in der Arbeit von Feehan, McGee, Sliva & Stanton (1994) analysiert. Für das Alter von 15 Jahren werden in dieser Studie Erstgeborene als auffälliger hinsichtlich internalisierender Störungen beschrieben.

2.5.2. Lebenszeitprävalenz

Bei den vier aufgeführten Untersuchungen (siehe Tabelle 2), welche die Lebenszeitprävalenz einbezogen haben, liegt die Gesamtprävalenz mit 27% bis 49% deutlich höher als bei der Periodenprävalenz. Diese Erhöhung wird bei beiden Geschlechtern und ebenso in der Zunahme der Wahrscheinlichkeit für eine psychiatrische Diagnose bei Unterschichtsangehörigen sichtbar. Hier findet sich bezogen auf Lebenszeitprävalenzen auch der einzige publizierte Hinweis auf einen ungünstigen Einfluss der niedrigeren Schichtzugehörigkeit auf psychische Störungen. Dieser variiert bei niedrigerer Schichtzugehörigkeit zwischen OR 1.7 für somatoforme Störungen und OR 3.1 für Substanzmissbrauchstörungen mit illegalen Drogen (Wittchen et al., 1998). Zum Einfluss der Geschwisterposition gibt es in keiner der analysierten Studien relevante Angaben.

2.6. Diskussion

Die mittlere Periodenprävalenz für psychische Störungen bei Kindern und Jugendlichen liegt in den neueren Studien bei 22 Prozent und damit höher als in früheren Übersichtsarbeiten berichtet. Demgemäss muss in den westlichen Industriegesellschaften im Durchschnitt bei etwa jedem fünften Kind bzw. Jugendlichen zu irgendeinem Zeitpunkt mit einer psychischen Störung gerechnet werden, die den Kriterien der internationalen Klassifikationssysteme ICD10 oder DSM-III-R bzw. DSM-IV entspricht. Diese Quote sinkt auf durchschnittlich 16% ab, sobald das Kriterium der psychosozialen Funktionstüchtigkeit berücksichtigt wird, das allerdings nur in einer Minderzahl von 6 der 21 durchgeführten epidemiologischen Studien zur Anwendung kam.

Tabelle 2: Anlage und Ergebnisse epidemiologischer Studien zur Lebenszeitprävalenz psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen

Nr. der Studie, Autoren	**Name der Studie, Studienort, Erhebungsjahr(e)**	**N**	**Alter in Jahren**	**Klassi-fikation**	**Infor-manten**	**Prävalenzraten**			
						Total %	**Altersgruppen** (in Jahren) %	**Geschlecht** %	**SÖS** %
1. Essau et al. (1998)	Bremer Jugendstudie, Deutschland, 1996/97	1035	12-17	DSM-IV	J	41.9	k.A.	k.A.	k.A.
2. Wittchen et al. (1998)	EDSP Studie, Deutschland, 1995	3021	14-24	DSM-IV	E	27.7	k.A.	m:19.4 w:35.7	U: OR=1.7-3.1
3. Reinherz et al. (1993)	k.A., USA, 1977-90	386	18	DSM-III-R	J	49.1	k.A.	Einzeldiagnosen	Einzel-diagnosen
4. Lewinsohn et al. (1993)	Oregon Adolescent Depression Project, Oregon, USA, 1987/88/89	1710 1508	14-18 15-19	DSM-III-R	J	37.1	k.A.	k.A.	k.A.

Anmerkungen: SÖS=Sozioökonomischer Status (O=Oberschicht, M=Mittelschicht, U= Unterschicht); E=Eltern, K=Kind, J= Jugendliche, L=Lehrer, m=männlich, w=weiblich; k.A.=keine Angabe

Im Allgemeinen zeichnen sich in den referierten epidemiologischen Studien relativ wenig Zusammenhänge von Prävalenzraten mit soziodemografischen Merkmalen ab. Auch in den neueren Studien zeigte sich, dass die Prävalenzraten verschiedener Störungen für die Geschlechter unterschiedlich verlaufen (Angold et al. 2002; Ihle & Esser, 2002; Steinhausen et al., 1998). Bei Jungen wurden beispielsweise häufiger Aufmerksamkeitsdefizit-/Hyperaktivitätsstörungen (Angold et al., 2002; Ihle & Esser, 2002), Tics (Steinhausen et al., 1998) sowie dissoziale Störungen und Störungen durch Substanzgebrauch diagnostiziert, bei Mädchen hingegen mehr Essstörungen und psychosomatische Störungen (Ihle & Esser, 2002).

Ferner ist die Bedeutung des Alters in verschiedenen Analysen auch für das Kindes- und Jugendalter wiederholt untersucht worden. So haben Roberts et al. (1998) in einer umfangreichen Übersichtsarbeit der Resultate von 52 epidemiologischen Studien aus fast 40 Jahren Zusammenhänge zwischen Alter und psychischen Störungen analysiert; analoge Analysen stammen von Goodman, Ford und Meltzer (2002) sowie Ford, Goodman, Robert und Meltzer (2003). Die in der vorliegenden Arbeit durchgeführten Analysen ergeben ein widersprüchliches Bild zum Zusammenhang zwischen Alter und Prävalenzraten psychischer Störungen. Sowohl kontinuierliche Zunahmen als auch Abnahmen werden sichtbar. Ebenso werden schwankende Prävalenzraten berichtet, wobei die Alterstufe um 12 Jahre als am wenigsten auffällig beschrieben wird. Betrachtet man Jungen und Mädchen getrennt, so wird die Veränderung mit steigendem Alter im Sinne einer Interaktion von Alter und Geschlecht deutlicher. Jungen sind im Kindesalter und nur teilweise noch im Jugendalter deutlich auffälliger als Mädchen. Hingegen weisen weibliche Jugendliche höhere Gesamtprävalenzraten psychischer Störungen auf als männliche Jugendliche. Im jungen Erwachsenenalter zeigen die zwei Studien, die nach Geschlecht getrennte Ergebnisse publizierten, eine erneute Angleichung der Prävalenzraten (Ihle, Esser, Schmidt & Blanz, 2000; Newman et al., 1996).

Zur Bedeutung der Sozialschicht liegen nur begrenzte Erkenntnisse vor. Sozialschichteffekte wurden nur bei sechs von 21 Studien zu Periodenprävalenzen ermittelt. Tendenziell ist eine höhere Wahrscheinlichkeit für psychische Störungen bei Angehörigen tiefer Sozialschichten auszumachen. In hoch entwickelten Ländern wie z.B. der Schweiz (vgl. die Studie von Steinhausen et al., 1998) ist kein oder nur

ein sehr geringer Sozialschichteffekt zu beobachten. Schliesslich lassen sich zur Bedeutung der Geschwisterposition für die Psychopathologie von Kindern und Jugendlichen aus den epidemiologischen Studien der letzten Jahrzehnte keine Schlussfolgerungen ziehen, da dieses Merkmal bisher kaum in epidemiologische Studien einbezogen worden ist.

Die Generalisierbarkeit der dargestellten Trends der epidemiologischen Forschung zu psychischen Störungen bei Kindern und Jugendlichen muss allerdings relativiert werden. Aufgrund der unterschiedlichen Studiendesigns hinsichtlich Stichproben-merkmalen, eingesetzter diagnostischer Instrumente und Operationalisierungen sowie Informanten kann die transkulturelle Gültigkeit der Befunde nicht abschliessend beurteilt werden. Meist sind die Falldefinitionen und –identifikationen, die Altersspanne, die Stichprobengrössen, die Erhebungsinstrumente oder andere Faktoren nicht einheitlich (Angold & Costello, 1995; Fombonne, 2002; Ihle & Esser, 2002; Roberts et al., 1998; Verhulst, 1995). Die Ergebnisse der Studien vor und nach 1990 sind speziell aufgrund von Unterschieden bei der Falldefinition und –identifikation nur schwer zu vergleichen. Klinische Einschätzungen generieren gemäss Roberts et al. (1998) niedrigere Prävalenzen als Einschätzungen nach den Kriterien des DSM-III oder DSM-III-R. Ein weiterer methodischer Unterschied ist bei den Studien nach 1990 durch den Einbezug von mehren Informanten in einigen Studien entstanden.

In den letzten Jahren wurden deshalb Mindestanforderungen an epidemiologische Studien formuliert (Bird, 1996; Brandenburg et al., 1990; Costello et al., 2005; Fombonne, 2002; Ihle & Esser, 2002; Links, 1983; Petermann, 2005; Roberts et al., 1998). Diese umfassen unter anderem die Konzentration auf eine einheitliche Definition und Identifikation von Fällen (Fombonne, 2002; Bird, 1996; Brandenburg et al., 1990; Roberts et al., 1998) mit dem Einbezug des Schweregrades der psychischen Symptome, des wahrgenommenen Behandlungsbedarfs sowie der Übereinstimmung der berichteten Symptome bei mehreren Informanten bei den Prävalenzbestimmungen (Fombonne, 2002; Bird, 1996; Brandenburg et al., 1990), die Operationalisierung von Beeinträchtigungen, Schweregradeinstufungen von Störungen bzw. von Behandlungsbedürftigkeit (Ihle & Esser, 2002), die Reliabilität und Validität der Untersuchungsinstrumente (Links, 1983; Fombonne, 2002), sowie

den Einbezug von multiplen Informanten und die vereinheitlichte Gewichtung der so gewonnenen Angaben (Brandenburg et al., 1990; Fombonne, 2002; Links, 1983; Petermann, 2005). Roberts et al. (1998) legen zudem einheitliche Strategien für die Datenanalyse und –präsentation nahe. Links (1983) forderte bereits in seiner Übersichtsarbeit der älteren Studien, die Aufmerksamkeit auch auf die Definition und Messung von Korrelaten von Störungen zu legen, wie z.B. den Einfluss von familiären Variablen auf psychosoziale Störungen.

Costello et al. (2005) kommen in ihrer Übersichtsarbeit zum Schluss, dass die für die Epidemiologie entwickelten hoch strukturierten psychiatrischen Interviews einem Gold-Standard für die Diagnosestellung am nächsten kommen. Sie empfehlen z.B. das DISC (Diagnostic Interview Schedule for Children; Shaffer, Fisher, Lucas, Dulcan & Schwab-Stone, 2000), das CAPA (Child and Adolescent Psychiatric Assessment; Angold & Costello, 2000) oder das DAWBA (Development and Well-Being Assessment; Goodman, Ford, Richards, Gatward & Meltzer, 2000). Für die zukünftige Forschung wäre es wichtig, die Entwicklung und Validierung derartiger Interviews weltweit voranzutreiben. Dies ist für das DISC teilweise und für das DAWBA bereits recht umfangreich erfolgt. Von mehreren Autoren wird ferner empfohlen, zusätzlich den Schweregrad der Symptome sowie die Beeinträchtigung des Funktionsniveaus bei zukünftigen epidemiologischen Studien zu berücksichtigen (Fombonne, 2002; Bird, 1996; Brandenburg et al., 1990). Um zuverlässige Falldefinitionen zu erhalten, betonen verschiedene Autoren (Brandenburg et al., 1990; Costello et al., 2005; Fombonne, 2002; Roberts et al.,1998) den Einbezug der psychosozialen Funktionsbeeinträchtigung der untersuchten Personen sowie auch die Erhebung der Symptomstärke und –dauer. Diese Empfehlung wurde jedoch bisher nur in einer Minderheit von Studien umgesetzt.

Ein weiteres Problem besteht in der Berücksichtigung verschiedener Informanten, d.h. der Selbstauskünfte der Kinder und Jugendlichen bzw. der Fremdauskünfte der Eltern und Lehrpersonen. Verschiedene Studien zeigen, dass Prävalenzraten stark davon abhängen, wie mit Einschätzungen von verschiedenen Informanten umgegangen wird (Fombonne, 2002; Ihle & Esser, 2002; Petermann, 2005; Roberts et al., 1998; Steinhausen & Winkler Metzke, 2003; Verhulst et al., 1997). Roberts et al. (1998) berichten bei den von ihnen analysierten Studien von ungleichen

Entscheidungsregeln, wie mit den Informationen mehrerer Informanten umgegangen wird. Van der Ende und Verhulst (2005) kommen in ihrer Studie zum Schluss, dass Angaben von nur einer Informationsperson zu einem unvollständigen oder verzerrten Verständnis der betroffenen Patienten führen. Mit steigendem Alter der Kinder und Jugendlichen unterscheiden sich die Angaben aus verschiedenen Informationsquellen immer mehr.

Das Informantenproblem ist in einer Reihe von Studien spezifisch untersucht worden. Bird, Gould und Staghezza (1992) benutzten in ihrer Studie zwei verschiedene Analysemöglichkeiten, die „und/oder Regel“ bzw. die „Analyse der bedingten Übereinstimmung“, um den optimalen Informanten zu gewinnen. Letztere Methode wurde in Anlehnung an die Studie von Loeber, Green, Lahey und Stouthamer-Loeber (1989) eingesetzt. Offord, Boyle, Racine, Szatmari, Fleming, Sanford und Lipman (1996) verglichen vier Strategien, wie mit uneinigen Informationen von Eltern und Lehrpersonen bei der diagnostischen Klassifikation von Kindern umgegangen werden kann. Ferner prüften Jensen, Rubio-Stipec, Canina, Bird, Dulcan, Schwab-Stone und Lahey (1999) in ihrer Untersuchung verschiedene Regeln zu Diskriminierung des besseren Informanten. Fergusson et al. (1993) kombinierten zwei Methoden, um die „beste Einschätzung“ von Prävalenzen von psychischen Störungen zu generieren, die „Methode der optimalen Informanten“ nach Loeber et al. (1989) sowie die „Methode der Latent Class Modellierung“. Schliesslich analysierten Baillargeon, Boulerice, Tremblay, Zoccolillo und Vitaro (2001) ihre Daten ebenfalls mit Hilfe von Latent Class Analysen (LCA), um die Übereinstimmung zwischen Informanten, in Abwesenheit eines „gold Standards“, zu modellieren.

Als weitere Schlussfolgerung aus diesen methodisch sehr unterschiedlich angelegten Analysen lässt sich für die epidemiologische Forschung zur Prävalenz psychischer Störungen bei Kindern und Jugendlichen ableiten, dass neben der Standardisierung der Untersuchungsinstrumente die Berücksichtigung von mehr als einer Informationsquelle zur (Bird et al., 1992; Offord et al., 1996; Jensen et al., 1999; Baillargeon et al., 2001). Ferner lässt sich die Feststellung belegen, dass bei internalisierenden Störungen die Kinder und Jugendlichen genauer Auskunft geben können, während bei externalisierenden Störungen die Angaben von Eltern und Lehrpersonen realitätsgerechter sind.

2.7. Literatur

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3. Teilprojekt 2: Manuskript 2: Adolescent Trajectories of Internalizing Problems and Self-Esteem[2]

3.1. Abstract

Internalizing problems represent one of the most common and persistent forms of maladjustment in adolescence and are closely linked to self-esteem. In the present study, developmental trajectories of internalizing problems and self-esteem from adolescence into young adulthood were analyzed. Semi-parametric mixture models based on longitudinal data were employed in a sample of N=593 adolescents with 309 (52.1 percent) females and 284 (47.9 percent) males. At three times, internalizing problems were measured by the Youth Self Report (YSR) or the Young Adult Self Report (YASR). In addition, the Rosenberg self-esteem scale was used for comparative modelling. In females, a model of internalizing problems with two groups showed the best model fit, whereas in males a model with three groups fitted best. The models of self-esteem resulted in each three groups in the two genders. Thus, developmental trajectories of internalizing problems and self-esteem in adolescence are different for the two genders.

Abbreviations

SAS: Software for statistical analyses; PROC TRAJ: SAS procedure Trajectories; BIC: Bayesian information criteria; ZESCAP: Zurich Epidemiological Study of Child and Adolescent Psychopathology, ZAPPS: Zurich Adolescent Psychology and Psychopathology Study; YSR: Youth Self-Report; YASR: Young Adult Self-Report; RSE: Rosenberg Self-Esteem Scale

3.2. Introduction

Internalizing problems in adolescence represent one of the most common and persistent forms of maladjustment in adolescence (Achenbach, 1991; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000) and comprise symptoms such as feelings of depression, sadness, irritability, lack of pleasure, guilt, shame, shyness, low self-esteem, and also efforts to control or suppress these negative emotions. In addition,

[2] Eschmann, S., Zimprich, D., Winkler Metzke, C., & Steinhausen, H.-C. (submitted). Adolescent Trajectories of Internalizing Problems and Self-Esteem.

children and adolescents with internalizing problems are at high risk of showing similar problems during adulthood (Graber, 2004; Kovacs & Devlin, 1998; Rutter, 2007). Quite obviously, there are different pathways of internalizing problems with some adolescents losing their internalizing problems whereas others remain affected (Graber, 2004; Ollendick, Shortt, & Sander, 2005). However, so far these different developmental trajectories of internalizing problems have not been studied extensively. Various studies on adolescent internalizing problems are based on a cross-sectional approach searching for distinctive subtypes based on diagnostic criteria (Eschmann, Weber Häner, & Steinhausen, 2007; Verhulst et al., 2003; Zwaanswijk, Verhaak, Bensing, van der Ende, & Verhulst, 2003). Other studies employed a more dynamic perspective on the development of internalizing problems by identifying average trajectories regardless of any possible subgroups (Bongers, Koot, van der Ende, & Verhulst, 2003; Dekovic, Buist, & Reitz, 2004; Galambos, Barker, & Krahn, 2006; Leve, Kim, & Pears, 2005).

Furthermore, only few attempts have been made to use person-oriented modelling of internalizing problems in children and adolescents over time and only few variables have been controlled that might have an impact on the developmental trajectories of internalizing problems. These studies were based on different age groups and used different constructs. In general, at least three different trajectories have been found in these studies. Sterba and colleagues (2007) modelled maternally-reported internalizing problems of children by use of person-oriented latent growth mixture models (Muthen & Shedden, 1999) and found three classes (low-stable, decreasing-increasing, and elevated-stable trajectories) with similar shape and predictive validity of the internalizing trajectory classes for both genders. In a Dutch general population study, Dekker and colleagues (2007), focused on developmental trajectories of parent-reported depressive symptoms from early childhood to late adolescence and identified six developmental trajectories in both genders (female model: low decreasing, very low increasing, low stable, moderate stable, adolescence-onset increasing high, and high increasing group; male model: very low decreasing, low stable, moderate increasing, high decreasing, high childhood peak, and increasing high group). However, the reported group sizes of five groups accounted for only 1 percent of the population and did not fulfill the criterion of a minimum group size of 5 percent of the sample used for a model as suggested by Delucchi, Matzger and

Weisner (2004). Five gender-specific trajectory groups were found in self-reported depressive phenomena in elementary-school students (both gender models containing: low depressed stables, low depressed risers, mildly depressed stables, moderately depressed changers, and moderately depressed risers) (Mazza, Fleming, Abbott, Haggerty, & Catalano, 2009) and four trajectories of depressive symptoms (very-low, moderate-decreasing, high-decreasing, and high-persistent group) were identified in adolescent and young adult men (Stoolmiller, Kim, & Capaldi, 2005) based on the person-oriented general growth mixture modelling approach (GGMM, Muthen & Shedden, 1999). Finally, Duchesne, Vitaro, Larose, and Tremblay (2008) modelled maternally-reported anxiety during elementary-school years and found four classes (low, moderate, high, and chronic group) without controlling for gender. In summary, few studies on developmental trajectories of internalizing problems were based on person-oriented adolescent self-reports controlling for gender.

Furthermore, epidemiological studies have shown with sufficient cross-cultural consistency that during childhood the two genders have comparable rates of mental disorders whereas marked gender differences appear only in adolescence with males showing more externalizing problems and females showing more internalizing problems (Bongers et al., 2003; Dekovic et al., 2004; Eschmann et al., 2007; Verhulst et al., 2003; Zwaanswijk et al., 2003). Therefore, one has to expect also different developmental trajectories of internalizing problems in boys and girls during adolescence (Bongers et al., 2003; Dekker et al., 2007; Leve et al., 2005) so that gender has to be controlled for when modelling group-based trajectories during adolescence.

In addition, both personality factors and various components of the social context have to be considered for a better understanding of developmental pathways, particularly, when it comes to individual psychopathology. Individual personality features and chronic stresses and strains have been shown to be important predictors of internalizing disorders in late adolescence. Among these predictors, self-esteem is of particular interest. A small series of studies have shown that negative self-esteem is associated with the development of mental problems and the associations between these two constructs has been described in various ways. Self-esteem has been shown to be both a compensatory factor (Steinhausen & Winkler

Metzke, 2001) and a protective factor contributing to better health and positive social behaviour by buffering against the impact of negative influences (Mann, Hosman, Schaalma, & de Vries, 2004). Furthermore, low self-esteem has been called a non-specific risk factor and a causal factor for internalizing problems (Mann et al., 2004) and depression (Galambos et al., 2006; Orth, Robins, & Roberts, 2008).

There are a few studies that focussed on the development of self-esteem (Harter & Whitesell, 2003; Trzesniewski, Donnellan, & Robins, 2003) and gender-specific effects on self-esteem (Kling, Hyde, Showers, & Buswell, 1999; Sandmeier, 2005). A general developmental trajectory of self-esteem has been described by Trzesniewski, Donnellan, and Robins (2003). These authors performed a meta-analysis based on 50 studies (N=29.839) across the life span from age six to 83 years and analyzed data from four large national studies (N=74.381). They found an average trajectory of self-esteem with a robust curvilinear trend. The stability of self-esteem was relatively low in early childhood, increased consistently in adolescence and young adulthood, and did not differ by gender. In a study of high school graduates, Harter and Whitesell (2003) identified three groups: a stable group (40 percent), a group with increased self-esteem (23 percent), and, a final group of adolescents with a decreasing self-esteem (17 percent). However, 20 percent of the sample remained uncategorized because there was insufficient stability or change, and there was no control for gender in this study. Only two studies controlled for gender and found that males have higher self-esteem than females (Kling et al., 1999; Sandmeier, 2005). Clearly, these findings indicate that gender again has to be controlled for in modelling self-esteem trajectories during adolescence.

Objectives of the Study

Based on the studies cited above, the present study had various aims. First, the study looked for the separate identification of developmental trajectories of two distinct but theoretically related constructs, namely internalizing problems and self-esteem. Secondly, based on the assumption that there should be an overlap of the two constructs, joint analyses of developmental trajectories of internalizing problems and self-esteem were performed. Thirdly, it was expected that there would be gender-specific univariate models of internalizing problems and self-esteem

containing at least three trajectory groups including persisters, increasers, and decreasers with girls showing larger problematic trajectory groups than boys.

3.3. Methods

3.3.1. Sample Description

Originally, the present sample was based on a cohort of pupils aged 6 to 17 who were living in the Canton of Zurich, Switzerland in 1994. The cohort was a stratified randomized sample representing the 12 counties of the canton, the school grades, and the types of schools. It also formed the basis of the Zurich Epidemiological Study of Child and Adolescent Psychopathology (ZESCAP). A full description of the sampling procedure was given in a previous article (Steinhausen & Winkler Metzke, 2001). The preadolescents and adolescents (aged 11 – 17 years) of the ZESCAP sample (N =1110) provided the basic cohort of the longitudinal Zurich Adolescent Psychology and Psychopathology Study (ZAPPS).

This cohort of 1.110 subjects was studied longitudinally, and multidimensional screenings based on various questionnaires were performed on three occasions, namely, in 1994, 1997 and 2001. Subsequently, structured psychiatric interviews were conducted with those subjects who scored above the cut-off scores as well as with a certain number of controls scoring below the cut-off score on each screening instrument. Due to the screening procedure, the sample was reduced each time. In addition, subjects dropped out of the sample (e.g. after leaving school) during both the screening and the interview phases. A larger proportion of subjects and, particularly, more males than females withdrew at the interview stage compared to the screening stage. In order to work with a full data set including all questionnaires and interviews based on a sample which was still representative for local census data, the final longitudinal cohort comprised 593 subjects with three waves of assessment. Mean ages of this longitudinal cohort at the three times of assessment were 13.6 (SD = 1.6), 16.6 (SD = 1.6), and 20.2 (SD = 1.7) years. The sample consisted of 284 (47.9 percent) males and 309 (52.1 percent) females. These 593 subjects were representative for the census population with regard to gender (Chi^2=2.14, df=1, p=n.s.) and biannual age distribution of 17 – 22 years olds (Chi^2=2.67, df=2, p=n.s.). The data base of this sample has been used for various

previous papers (Steinhausen, Bösiger, & Winkler Metzke, 2006; Steinhausen, Eschmann, Heimgartner, & Winkler Metzke, 2008; Steinhausen, Eschmann, & Winkler Metzke, 2007; Steinhausen, Gavez, & Winkler Metzke, 2005; Steinhausen, Haslimeier, & Winkler Metzke, 2006; Steinhausen & Winkler Metzke, 2004, 2007). The present study draws on the data collected on these three occasions (N=593) which deals with internalizing problems and self-esteem with slightly different numbers of complete data sets for internalizing problems (N=537) and self-esteem (N=520).

3.3.2. Instruments

The ZAPPS based on a theoretical model studies the conditions and processes which are essential to the mental health of growing young people as well as the development of mental problems and disorders. A broadband questionnaire was chosen in order to obtain information on relevant behavioural and emotional problems of adolescents. In order to analyze potential risk, compensatory, vulnerability, and protective factors of psychopathology (Steinhausen & Winkler Metzke, 2001), life events were hypothetically seen as stressors, while various psychosocial variables, including coping, self-related cognitions, and peer acceptance, were regarded as moderating factors with regard to behavioural and emotional problems.

Questionnaires were filled out confidentially by the subjects during school hours in 1994, those completed in 1997 and 2001 were returned by mail. All questionnaires reflect raw scores and are positively keyed; high scores represent high expression of the content of the scale. All scales showed good to excellent reliability. A list of Alpha coefficients may be obtained from the authors. The present study uses a reduced number of assessment modules of the ZAPPS.

Youth Self-Report (YSR)

The problem behaviour section of the YSR (Achenbach, 1991) and its Swiss adaptation (Steinhausen & Winkler Metzke, 1998b) consists of the following primary subscales: socially withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. In addition, two second-order scales reflecting internalizing

and externalizing problems are calculated. Internalizing problems are based on the three subscales measuring anxiety/depression, withdrawal, and somatic complaints. Reliability of the scale measuring internalizing problems was excellent in the present sample with alpha coefficients ranging between 0.86 and 0.89.

Young Adult Self-Report (YASR)

With the exception of the subscale measuring social problems and the inclusion of the subscale measuring intrusiveness, the YASR (Achenbach, 1997) consists of the same primary and secondary dimensions as the YSR (Achenbach, 1991). The YASR was used during phase 3. Reliability of the scale measuring internalizing problems was also excellent in the present sample with alpha coefficients ranging between 0.86 and 0.89.

Rosenberg Self-Esteem Scale (RSE)

The ten-item scale by Rosenberg (Rosenberg, 1965) was used to measure self-esteem in terms of introspective capacities for feelings, actions, and past. The RSE was used during on all three phases of assessment. Reliability of this scale was good to excellent in the present sample with alpha coefficients ranging between 0.82 and 0.91.

3.3.3. Statistical Analyses

The semi-parametric group-based approach suggested by Nagin and co-workers was used in order to identify distinctive groups of individual trajectories of internalizing problems and self-esteem within the sample (Jones & Nagin, 2007; Jones, Nagin, & Roeder, 2001; Nagin, 1999, 2005; Nagin & Tremblay, 2005). The group-based trajectory approach represents a specialised application of finite mixture modeling to identify clusters of individuals following similar developments of selected behaviour across age. For further information about the method and the advantage of group-based trajectory modelling over conventional growth curve modelling the reader is referred to Nagin (1999; 2005).

The analyses were based on the SAS-based procedure PROC TRAJ (Jones et al., 2001; Nagin, 1999) and were performed separately for the two genders. In the first step of the analysis, model estimations were conducted for the two genders

separately by estimating two separate trajectory models, one for internalizing problems and the other for self-esteem. Subsequently, the number of groups and the shape of the univariate models of the two criteria were used for model estimation of a joint trajectory model as suggested by Nagin and co-workers (Barker, Tremblay, Nagin, Vitaro, & Lacourse, 2006; Jones & Nagin, 2007; Nagin, 2005; Nagin & Tremblay, 2001).

In the resulting four univariate models, the censored normal model was estimated for the dimensions of internalizing problems and self-esteem. In the censored normal model, the linkage between age and each internalizing problems and self-esteem was established by means of a latent variable y* that can be thought of as measuring the potential for engaging in the two variables of interest, i.e., internalizing problems and self-esteem ($y^* = \beta_0 + \beta_1 \text{ age} + \beta_2 \text{ age}^2 + \ldots + \varepsilon$). This latent variable y* may then be predicted by linear, quadratic, cubic, and other effects of age.

Selecting the number of trajectory groups that best fit the data is a key step in the estimation of these models. Following Nagin and colleagues (Jones & Nagin, 2007; Jones et al., 2001; Nagin, 1999; Nagin & Tremblay, 2001), the selection of a univariate model in terms of the absolute fit with the optimal number of groups was based on the Bayesian Information Criterion (BIC), where a larger BIC indicates a better absolute model fit. In addition, the relative fit of two competing models was evaluated using the Bayes factor and Jeffreys's scale of evidence for Bayes factors by Wassermann (1997) as cited in Nagin (1999). Various other criteria must also be met. First, the calculated approximation of the posterior probabilities of the models should be included in the choice for the best fitting model (Nagin, 1999). Secondly, economy should be a relevant criterion with regard to the numbers of groups of a model (Delucchi et al., 2004; Nagin, 1999, 2005; Nagin & Tremblay, 2005). Therefore, Delucchi and colleagues (2004) suggested that in a model there should be a group size of at least five percent of the sample. Thirdly, the shape of the trajectory groups was estimated by selecting models with significant parameters.

In the second step of the analysis, the final joint model was estimated using the number and shapes of the trajectories which were found to be optimal based on the univariate model estimations of internalizing problems and self-esteem, as

recommended by Nagin and Tremblay (Nagin, 2005; Nagin & Tremblay, 2001). According to these experts, trajectories emerging from joint estimation differ little from their univariate counterparts (Nagin & Tremblay, 2001). The estimation of the joint model of internalizing problems and self-esteem resulted in three key outputs. The first key output was the identification of the optimal number of trajectory groups for both measurement series. The second key output was the probability of the membership in each trajectory group, and the third is the joint probability of membership in trajectory groups across both behaviours. For each adolescent, the procedure calculated two probabilities. E.g., one probability was of belonging to each trajectory group, based on the observed longitudinal pattern. For the second probability, the procedure determined the assigned trajectory group membership using the highest classification probability across groups. Group sizes of the depicted trajectory groups of the present study were based on population probabilities of group memberships. Therefore, the group sizes were slightly different from the average posterior probabilities of group memberships based on the data. The associations of the various groups of each two models in females and males were calculated using Cramer's V.

3.4. Results

3.4.1. Model Fit

First, each trajectory for internalizing problems and self-esteem was modelled as quadratic function of age in order to select the number of trajectory groups that best fit the data. A larger BIC indicates a better absolute model fit. The BIC's of the different modelings separated for gender are shown in Appendix 1. For internalizing problems in females, the BIC of the model with quadratic functions of age fitted best with two groups, whereas in males a model with three groups had the best fit. For self-esteem in females, a model with three groups fitted best, and in males models with 3 and 4 groups fitted best.

In addition, the relative fit of two competing models was evaluated by use of the Bayes factor and Jeffreys's scale of evidence for Bayes factors by Wassermann (1997). The posterior possibilities for the different models are also shown in Appendix 1. For internalizing problems in female adolescents, a model with 2 groups (p=0.89)

showed the highest posterior probability of the 6 models whereas in males a model with 3 groups (p=0.90) showed the highest posterior probability of the 6 models. For self-esteem in female adolescents, a model with 3 groups (p=0.88) showed the highest posterior probability of the 6 models. In male adolescents 2 of the 6 models had similar amounts of high posterior probabilities, namely, the 3 group model (p=0.39) and the 4 group model (p=0.42).

After selecting the group number for the best model fit, the shape of the trajectory groups was modelled by selecting models with significant parameters. The model analyses of all four resulting models showed only linear and quadratic and no cubic trajectories.

3.4.2. Univariate Trajectories of Internalizing Problems in the Two Genders

Models of individual trajectories of internalizing problems with two groups for females and three groups for males had the best absolute and relative model fit in the two samples. Each group comprised more than five percent of the relevant modelling sample. The best fitting model for females (BIC=-2593.45) showed two trajectories of internalizing problems. The larger group of the sample was called ‘low persisters’. The second group was called ‘adolescent peakers‘. The best fitting model for boys (BIC=-2358.16) showed three distinctive trajectories of internalizing problems. The largest group in this model was called ‘low persisters‘. The second group was called ‘fast decreasers‘. The smallest group was called ‘fast increasers‘.

3.4.3. Univariate Trajectories of Self-Esteem in the Two Genders

For self-esteem, a model of individual trajectories with three groups for females showed the best absolute and relative model fit. For male adolescents, models with 3 or 4 groups showed the best model fit. As suggested by Delucchi and colleagues (2004), each group of the female model comprised more than five percent of the relevant modelling sample. In contrast, the male models did not meet this suggestion because at least one group comprised less than five percent of the relevant modelling sample. Therefore, we looked for another model with only two groups. However, the resulting model fitted even worse. Both resulting models with 3 and 4 groups contained at least one of these small groups so that a model with one group

comprising less than 5 percent of the males had to be accepted. Therefore, a model with 3 groups had to be chosen for further analyses.
The best fitting model for females (BIC=-2409.20) showed three trajectories of self-esteem. The largest group of the sample was called ‘high persisters‘. The other two groups were called ‘moderate decreasers‘, and ‘fast increasers‘.The best-fitting model for males (BIC=-2227.30) also showed three distinctive trajectories of self-esteem. The largest group in this model was also called ‘high persisters‘. The second group was called ‘moderate increasers‘, and the smallest group was called ‘fast decreasers‘.

3.4.4. Joint Models of Internalizing Problems and Self-Esteem

The final joint models for the females and the males were estimated by use of the number and shapes of the trajectories which were found to be optimal based on the univariate model estimations of internalizing problems and self-esteem. The resulting model for females (BIC=-4863.42) showed two trajectories of internalizing problems and three trajectories of self-esteem based on populations’ probabilities of group memberships (see Figures 1 and 2). For internalizing problems, the larger group of the sample was called ‘low persisters’ and comprised 68.9 percent (N=213) sample-based posterior probability estimates of the females. The second group was called ‘adolescent peakers‘, and comprised 31.1 percent (N=96) of the female sub-sample. For self-esteem, the largest group of the sample was called ‘high persisters’ and comprised 60.2 percent (N=186) sample-based posterior probability estimates. The other two groups were called ‘moderate decreasers‘, and ‘fast increasers‘, and comprised 29.8 percent (N=92) and 10.0 percent (N=31) of the female sub-sample, respectively.

The best fitting model for males (BIC=-4487.23) showed each three distinctive trajectories of internalizing problems and of self-esteem based on populations’ probabilities of group memberships (see Figures 3 and 4). The largest group among the internalizing problems trajectories was called ‘low persisters‘, and comprised 70.4 percent (N=200) of the male sub-sample. The second group was called ‘fast decreasers‘, and contained 20.8 percent (N=59) of the male adolescents. The smallest group was called ‘fast increasers‘, and comprised 8.8 percent (N=25). For self-esteem, the largest group in this model was also called ‘high persisters’, and

comprised 75.0 percent (N=213) sample-based posterior probability estimates of the male adolescents. The second group was called ‘moderate increasers‘, and comprised 21.8 percent (N=62), and the smallest group was called ‘fast decreasers‘, and comprised 3.2 percent (N=9).

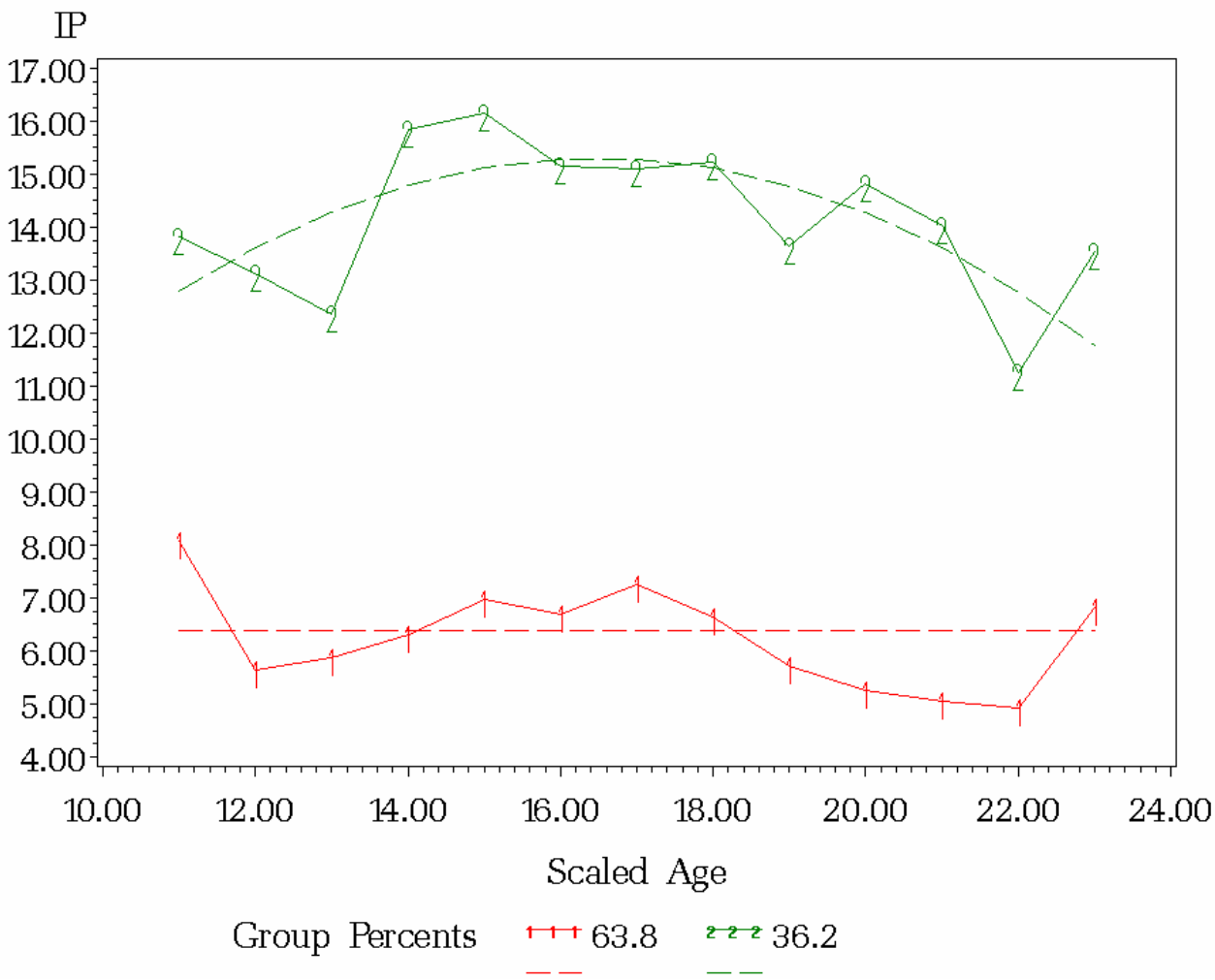

Fig. 1: Joint trajectory model of internalizing problems in female adolescents with means of two groups, based on populations’ probabilities of group memberships. Broken lines: model-based predicted trajectories; solid lines: actual trajectories of the two groups (N=309).

Legend: Group 1 ‘low persisters’, group 2 ‘adolescent peakers’.

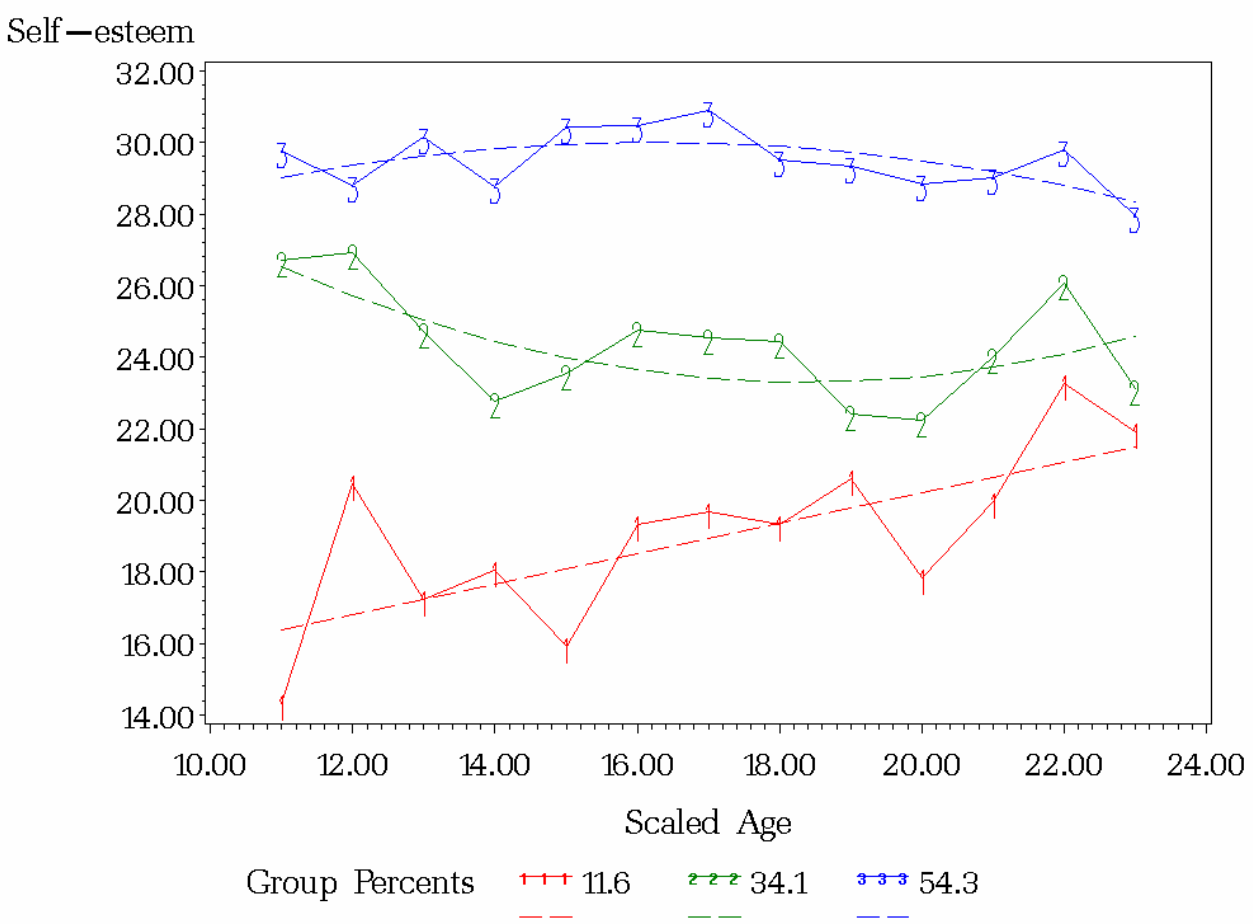

Fig. 2: Joint trajectory model of self-esteem in female adolescents with means of three groups, based on populations' probabilities of group memberships. Broken lines: model-based predicted trajectories; solid lines: actual trajectories of the two groups (N=309).

Legend: Group 1 'fast increasers', group 2 'moderate decreasers', group 3 'high persisters'.

Both gender models of self-esteem contained groups of high persisters, increasers, and decreasers. However, the proportions were significantly different (Chi^2=79.46, df=2, $p < 0.001$). Compared to females, there were more male adolescents among the high persister group (75.0 vs. 60.2 percent) and among the increasers (21.8 vs. 10.0 percent), and less males among the decreasers (3.2 vs. 29.8 percent). The comparison of the two models of self-esteem by gender is shown in Table 1.

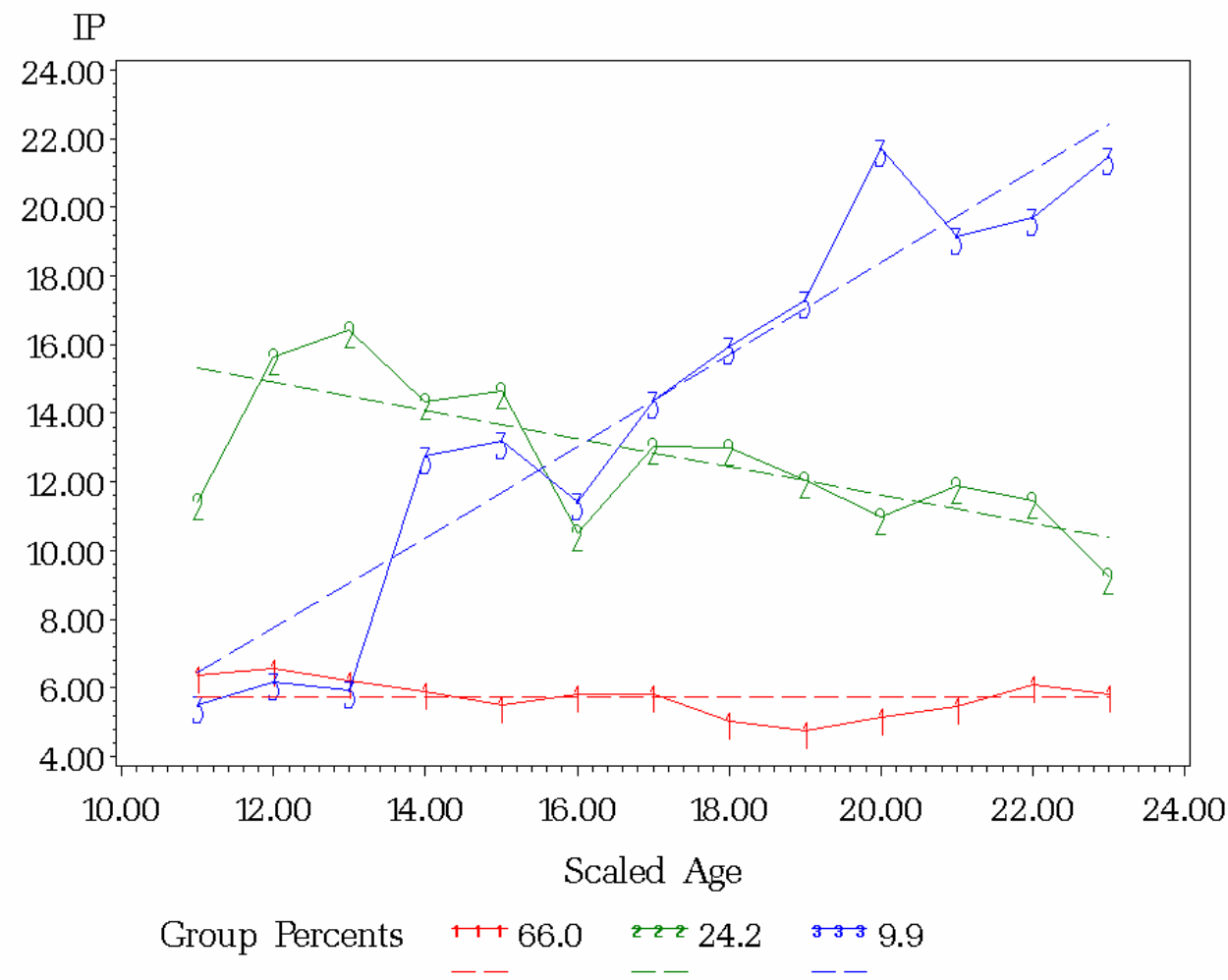

Fig. 3: Joint trajectory model of internalizing problems in male adolescents with means of three groups, based on populations' probabilities of group memberships. Broken lines: model-based predicted trajectories; solid lines: actual trajectories of the three groups (N=284).

Legend: Group 1 'low persisters', group 2 'fast decreasers', group 3 'fast increasers'.

Table 1: Self-esteem trajectory groups by gender, based on sample-based posterior probability estimates (N=593).

	Self-esteem trajectory groups		
	Increasers	Decreasers	High persisters
Gender	(N=93)	(N=101)	(N=399)
Female adolescents	31	92	186
(N=309)	(10.0%)	(29.8%)	(60.2%)
Male adolescents	62	9	213
(N=284)	(21.8%)	(3.2%)	(75.0%)

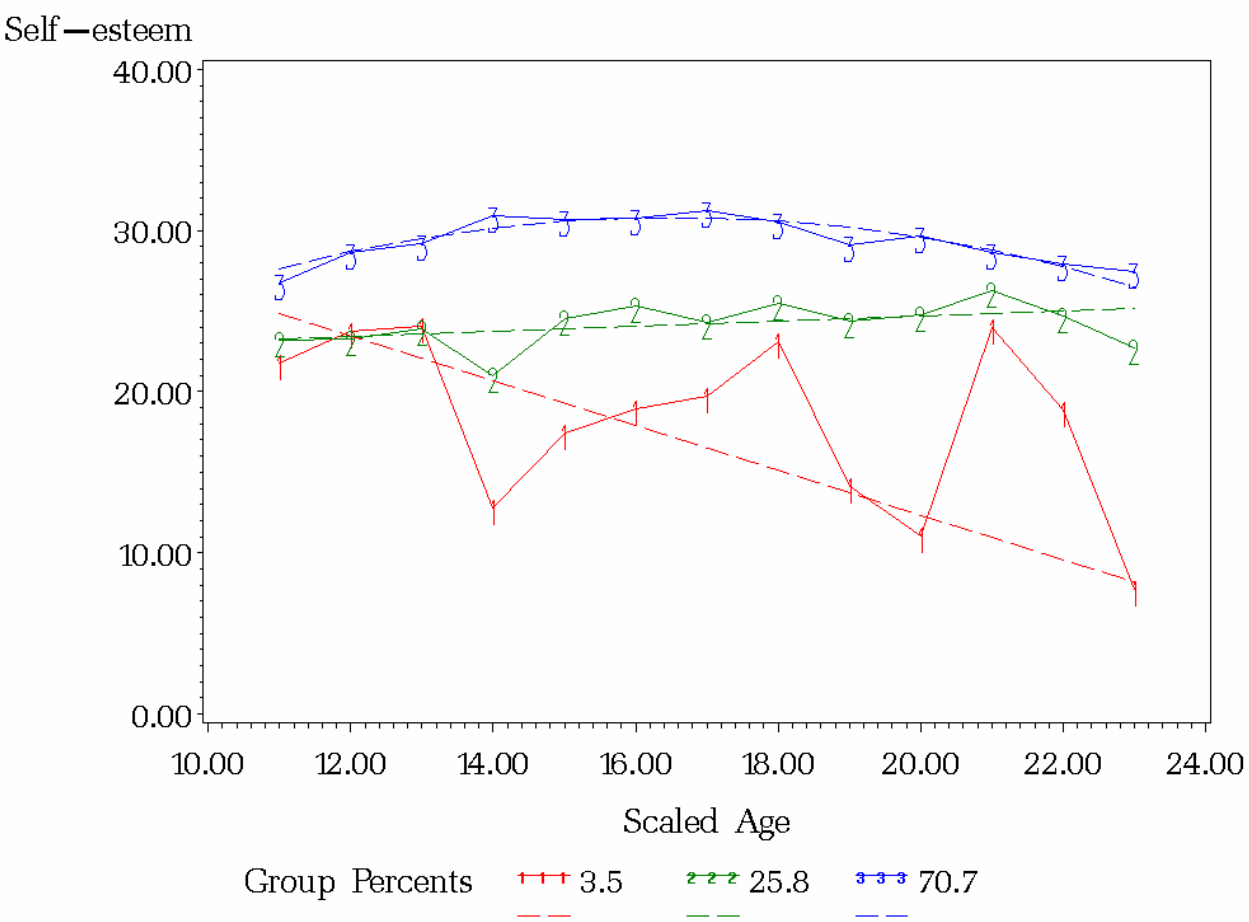

Fig. 4: Joint trajectory model of self-esteem in male adolescents with means of three groups, based on populations' probabilities of group memberships. Broken lines: model-based predicted trajectories; solid lines: actual trajectories of the three groups (N=284).

Legend: Group 1 'fast decreasers', group 2 'moderate increasers', group 3 'high persisters'.

The overlap of internalizing problems and self-esteem in females and males can be seen in Tables 2 and 3. The upper parts of the tables present the probabilities of membership in each self-esteem group conditional on membership in each of the internalizing problems group. The middle parts of the tables contain the probabilities of membership in each of the internalizing problems group conditional on the membership in each of the self-esteem group. The population-based probabilities of group memberships of self-esteem conditional on internalizing problems group and the converse probabilities in females are quite similar. The greatest exception is shown between the adolescent peakers of internalizing problems' and the fast increasers of self-esteem (see upper and middle parts of Table 2). The population-based probabilities of group memberships of self-esteem conditional on internalizing

problem group and the converse probabilities in males look also quite similar. The greatest exception is shown between the fast increasers of internalizing problems and the fast decreasers of self-esteem (see upper and middle parts of Table 3).

Table 2: Overlap of internalizing problems and self-esteem in females, based on population probabilities of group memberships (N=309).

Probability of self-esteem conditional on internalizing problems group			
		Self-esteem	
Internalizing problems	fast increasers	moderate decreasers	high persisters
low persisters	0%	27.8%	100%
adolescent peakers	100%	72.2%	0%
Total	100%	100%	100%
Probability of internalizing problems conditional on self-esteem group			
		Internalizing problems	
Self-esteem	low persisters	adolescent peakers	
fast increasers	0%	32.0%	
moderate decreasers	14.9%	68.0%	
high persisters	85.1%	0%	
Total	100%	100%	
Probability estimates for joint internalizing problems and self-esteem			
		Internalizing problems	
Self-esteem	low persisters	adolescent peakers	
fast increasers	0%	11.6%	
moderate decreasers	9.5%	24.6%	
high persisters	54.3%	0%	

The lower parts of Tables 2 and 3 present the population-based probability estimates for joint internalizing problems and self-esteem. The persisters groups showed the highest population-based probabilities. 54.3 percent of the females and 61.9 percent of the male adolescents belonged to the group of low persisters of internalizing problems and the group of high persisters of self-esteem. Among females the low persisters group of internalizing problems and the fast increasers of self-esteem, and among males the fast decreasers of self-esteem do not show any population-based probability estimates.

Table 3: Overlap of internalizing problems and self-esteem in males, based on population probabilities of group memberships (N=284).

Probability of self-esteem conditional on internalizing problems group			
		Self-esteem	
Internalizing problems	fast decreasers	moderate increasers	high persisters
low persisters	0%	15.8%	87.6%
fast decreasers	0%	63.2%	11.1%
fast increasers	100%	21.0%	1.3%
Total	100%	100%	100%
Probability of internalizing problems conditional on self-esteem group			
		Internalizing problems	
Self-esteem	low persisters	fast decreasers	fast increasers
fast decreasers	0%	0%	35.2%
moderate increasers	6.2%	67.6%	55.2%
high persisters	93.8%	32.4%	9.6%
Total	100%	100%	100%
Probability estimates for joint internalizing problems and self-esteem			
		Internalizing problems	
Self-esteem	low persisters	fast decreasers	fast increasers
fast decreasers	0%	0%	3.5%
moderate increasers	4.1%	16.3%	5.4%
high persisters	61.9%	7.8%	0.9%

3.4.5. Associations of the Models of Internalizing Problems and Self-Esteem

The associations of the joint model of internalizing problems and self-esteem for females are shown in Table 4, based on posterior probabilities of group memberships. A total of 87.3 percent of the female low persisters of internalizing problems were also members of the high persisters' group of the self-esteem model. All members of the second group of the internalizing problems model, i.e., adolescent peakers were also part of the other two groups of the self-esteem model, namely, moderate decreasers and fast increasers. The associations of the joint model of internalizing problems and self-esteem for females was very strong though highly significant (Cramer's $V=0.84$, $p<0.001$).

Findings based on the joint model for males are shown in the second part in Table 4. A total of 96.0 percent of the male low persisters of internalizing problems were also members of the high persisters' group of the self-esteem model. One third of the fast

decreasers of the internalizing problems model were also part of the high persisters group of the self-esteem model whereas two-thirds were part of the moderate increasers group of the self-esteem model. 60 percent of the fast increasers of the internalizing model were also member of the moderate increasers of the self-esteem model. Another third was associated with another group of the self-esteem model, i.e., fast decreasers. The association between the male groups of the two trajectory group models was strong though highly significant (Cramer's V=0.64, p<0.001).

Concerning the associations of the models of internalizing problems and self-esteem showed the population-based probability estimates for joint internalizing problems and self-esteem (see lower parts of Tables 2 and 3) similar results as the results based on the posterior probabilities of group memberships (see Table 4). This is an indicator for useful estimated models.

Table 4: Internalizing problems trajectory groups by self-esteem trajectory groups in the two genders based on sample-based posterior probabilities of group memberships.

Females (N=309)	Internalizing problems trajectory groups	
	Low persisters	Adolescent peakers
Self-esteem trajectory groups	(N=213; 68.9%)	(N=96; 31.1%)
Fast increasers	0	31
(N=31; 10.0%)	(0.0%)	(10.0%)
Moderate decreasers	27	65
(N=92; 29.8%)	(8.7%)	(21.0%)
High persisters	186	0
(N=186; 60.2%)	(60.2%)	(0.0%)

Males (N=284)	Internalizing problems trajectory groups		
	Low persisters	Fast decreasers	Fast increasers
Self-esteem trajectory groups	(N=200; 70.4%)	(N=59; 20.8%)	(N=25; 8.8%)
Fast decreasers	0	0	9
(N=9; 3.2%)	(0%)	(0%)	(3.2%)
Moderate increasers	8	39	15
(N=62; 21.8%)	(2.8%)	(13.7%)	(5.3%)
High persisters	192	20	1
(N=213; 75.0%)	(67.6%)	(7.0%)	(0.4%)

3.5. Discussion

This study aimed at a better understanding of adolescent development of internalizing problems and self-esteem and their relation to each other. The focus was on internalizing problems in the community rather than on internalizing disorders in a clinical group of adolescent. Internalizing problems are by far more common than internalizing disorders and could also be used for the identification of individuals who may be addressed by preventive measures. In the present study, both univariate and joint models showed that there are gender-specific developmental trajectories of internalizing problems and self esteem. In the following, these findings will be put into perspective by showing congruencies and differences with findings of other studies that examined the development of internalizing problems and self-esteem during adolescence. Particular emphasis will be placed on gender differences.

The first focus was on the analysis of longitudinal patterns of internalizing problems in both genders. In the univariate analyses, the female model of internalizing problems contained two groups called ‘low persisters‘, and ‘adolescent peakers‘ whereas the male model comprised three groups called ‘low persisters‘, ‘fast decreasers‘, and ‘fast increasers‘. Thus, the group containing low persisters was common to both models and had only slightly different frequencies (68.9 vs. 70.4 percent). In general, the findings support the hypothesis that internalizing problems in adolescence can be modelled with the group-based approach by Nagin and colleagues (Jones & Nagin, 2007; Jones et al., 2001; Nagin, 1999, 2005; Nagin & Tremblay, 2005). However, the female model showed only two rather than three trajectory groups and, therefore, was not completely in line with the expectation. Comparisons of these results with previous findings are hampered by differences in terms of design and methods. The studies by Sterba et al. (2007), Duchesne et al. (2008), and Mazza et al. (2009) covered completely different age ranges (2-11 years respective elementary-school years) than the present study. Similarly, the age range from 11 to 13 years in the study by Brendgen et al. (2005) has only a slight overlap with the age range (11-23 years) of the present study, and the model of the others did not control for gender. Furthermore, the present findings may also not be easily compared with those of the study by Dekker et al. (2007) that concentrated on parent-reported depression rather than self-reported internalizing problems. In addition, the age range was different (4-18years) and the authors ignored the

suggestion by Delucchi et al. (2004) that a minimum group size should be five percent of the sample.

Interestingly, group five of the female model of the study by Dekker et al. (2007) also contained females with a trajectory of increasing problems starting at the age of ten to eleven years. Thus, this group corresponds well with the second trajectory group (adolescent peakers) in the female model of the present study. In accordance with two other studies, only in the male model there was a declining trajectory. Declining trajectories of internalizing problems in males in late adolescence and young adulthood could be a result of decreasing proximity in time to original risk factors, e.g. negative life events, or decreasing impact of potential risk factors, e.g., negative parenting (Dekker et al., 2007; Stoolmiller et al., 2005). The model by Stoolmiller et al. (2005) was also based on self-reported depressive symptoms and comprised only groups of male adolescents and young adults, whereas the age range covered a more similar age range from 15 to 24 years. Except for the comparable declining trajectories, the four groups in the study by Stoolmiller et al.(2005) are contrasting to the three male groups of internalizing problems in the present study. Again, one should be guarded against a simple equation of internalizing problems and depressive symptoms. So far all studies do not yet provide an answer to the question why adolescents follow different trajectories of internalizing problems.

In a second step, the present study aimed particularly at gender-specific modelling of self-reported adolescent internalizing problems. It was shown, that the female model contained a large group of low persisters and a group of adolescent peakers, whereas the male model, in addition to the persisters, generated two groups, namely fast decreasers and fast increasers. These results underline the importance of focussing on gender differences by separate person-oriented models rather than using gender only as a time-invariant covariate. Again, the differences in the models of internalizing problems for female and male adolescents in the present study are clearly reflecting the expected gender differences based on previous research (Bongers et al., 2003; Dekovic et al., 2004; Eschmann et al., 2007; Verhulst et al., 2003; Zwaanswijk et al., 2003). The differences in developmental trajectories of internalizing problems for female and male adolescents may be partly explained by differences in pubertal development, different dispositional characteristics and

socialisation experiences (Zahn-Waxler et al., 2000), and in cognitive styles (Graber, 2004) including a more common individual ruminating cognitive style on emotions and stress in girls, rather, than in boys (Graber, 2004; Jose & Brown, 2008; Nolen-Hoeksema, 1994). Future research could try to identify these and other risk factors that might help in differentiating the group of female and male adolescents with internalizing problems from the low persisting group. Furthermore, it would be interesting to look for a replication of these findings in clinical samples of adolescents with internalizing disorders.

The findings on self-esteem trajectories were also in accordance with the expectations. The female model of self-esteem contained three groups called ‘fast increasers’, ‘moderate decreasers’, and ‘high persisters’. The male model comprised also three groups called ‘fast decreasers’, ‘moderate increasers’, and also ‘high persisters’. Thus, in both models of self-esteem there were groups containing high persisters, increasers, and decreasers, but the group sizes differed between the two models (e.g. ‘high persisters’: 60.2 vs. 75.0 percent). These results were consistent with our expectations and with the results from other studies (Harter & Whitesell, 2003; Kling et al., 1999; Sandmeier, 2005). The results based on the self-esteem models are different from those of the two models of internalizing problems by each containing some two-thirds of the adolescents in the persister groups. These results correspond well with the findings by Harter and Whitesell (2003) indicating that self-esteem is both a stable and a changing phenomenon in different persons. However, the study by Harter and Whitesell (2003) did not control for gender. In our study, both gender models of self-esteem showed groups of high persisters, increasers, and decreasers. However, there were strikingly different frequencies. Male adolescents were more frequently among the high persister group and among the increasers and less frequently among the decreasers than female adolescents. This means that one-third of the females and only a fifth of the males were having problems of self-esteem. These gender differences correspond well with findings by Kling et al. (1999) and Sandmeier (2005) who also found that young males scored higher on self-esteem than females. It may well be that the lower self-esteem in females may represent a vulnerability factor for developing internalizing problems to a greater extent as has been reported also in other studies (Mann et al., 2004; Orth et al., 2008).

The final joint models of internalizing problems and self-esteem revealed similar group sizes as the univariate models. As expected, the joint probabilities of internalizing problems and self-esteem indicated a substantial overlap of the two constructs. The majority of the adolescents were found in the persisters trajectories groups. Adolescents in the persisters groups were the same in each of the two constructs, i.e., internalizing problems and self-esteem, and did almost not exist among the risk groups of the other construct. Furthermore, in contrast to male adolescents the majority of female adolescent in the internalizing problems peakers group showed decreasing self-esteem. Furthermore, the joint models of internalizing problems and self-esteem showed that the majority of the female and male persisters in the models of internalizing problems were also members of the persisters group of the self-esteem models. However, compared to female adolescents more male adolescents of the two problematic groups of internalizing problems, namely, fast decreasers and fast increasers showed a high persistent self-esteem. Hence, the overlap between the models was stronger in females than in males and might need further longitudinal studies. The strong association between the two models for both genders corresponds with findings from other studies (Harter & Whitesell, 2003; Kling et al., 1999; Mann et al., 2004; Orth et al., 2008; Sandmeier, 2005; Steinhausen & Winkler Metzke, 2001) and confirms the finding that self-esteem is a moderating factor for both internalizing problems (Mann et al., 2004; Steinhausen & Winkler Metzke, 2001) and depressive symptoms (Mann et al., 2004; Orth et al., 2008; Steinhausen & Winkler Metzke, 2001).

Some limitations of the present study have to be mentioned. The findings may be sample dependent and need further replication. Furthermore, one could argue that the results are based on adolescent self-reports and are not corroborated by further information, e.g. parental reports. This issue could be studied by comparing adolescent and parent reports. However, it should be kept in mind that adolescent self-reports of internalizing problems are clearly more accurate than parental reports (Angold, 1988; Eschmann et al., 2007; Verhulst et al., 2003). Furthermore, the limitations of the method should be considered. The various groups are based on a model that may at best represent approximations to reality.

In conclusion, the present study provided new insight into gender-specific trajectories of internalizing problems and self-esteem. Future studies might ascertain predictors for the different internalizing problems' and self-esteem trajectories. These studies might address the impact of a variety of potential moderators or even mediators of both internalizing problems and self-esteem trajectories and might include the quality of both parent-adolescent and peer relationships, academic skills, stressful life events, and other factors of interest. Based on a better understanding of these processes there may be even avenues for the early identification of individuals at risk of developing persistent internalizing problems so that ways may be installed how these problems could be prevented. Furthermore, another focus on the predictive validity of the different developmental trajectories by studying the outcome of these groups in adulthood would add to the impact of this approach.

3.6. References

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3.7. Appendix

Appendix 1: Bayesian information criterion (BIC) scores and approximations of posterior probabilities of possible models with quadratic parameters (N=593).

	1- to 6-group models with quadratic parameters					
	1-group	2-group	3-group	4-group	5-group	6-group
Internalizing problems in females						
BIC	-2564.46	**-2504.69**	-2507.20	-2508.66	-2508.25	-2514.86
Approximations of posterior probabilities	0.00	**0.89**	0.07	0.02	0.03	0.00
Self-esteem in females						
BIC	-2487.58	-2413.54	**-2409.86**	-2412.13	-2415.15	-2421.80
Approximations of posterior probabilities	0.00	0.02	**0.88**	0.09	0.00	0.00
Internalizing problems in males						
BIC	-2369.14	-2302.83	**-2297.94**	-2300.29	-2303.07	-2313.02
Approximations of posterior probabilities	0.00	0.01	**0.90**	0.09	0.01	0.00
Self-esteem in males						
BIC	-2303.32	-2244.94	**-2232.02**	**-2231.95**	-2232.70	-2243.77
Approximations of posterior probabilities	0.00	0.00	**0.39**	**0.42**	0.20	0.00

4. Teilprojekt 3: Manuskript 3: Frequencies, Course and Correlates of Alcohol Use from Adolescence to Young Adulthood in a Swiss Community Survey[3]

4.1. Abstract

Background: Few studies have analyzed the frequency of alcohol use across time from adolescence to young adulthood and its outcome in young adulthood. A Swiss longitudinal multilevel assessment project using various measures of psychopathology and psychosocial variables allowed for the study of the frequency and correlates of alcohol use so that this developmental trajectory may be better understood. Method: Alcohol use was studied by a questionnaire in a cohort of N = 593 subjects who had been assessed at three times between adolescence and young adulthood within the Zurich Psychology and Psychopathology Study (ZAPPS). Other assessment included questionnaire data measuring emotional and behavioural problems, life events, coping style, self-related cognitions, perceived parenting style and school environment, and size and efficiency of the social network. Results: The increase of alcohol use from early adolescence to young adulthood showed only a few sex-specific differences in terms of the amount of alcohol consumption and the motives to drink. In late adolescence and young adulthood, males had a higher amount of alcohol consumption and were more frequently looking for drunkenness and feeling high. Males also experienced more negative consequences of alcohol use. A subgroup of heavy or problem drinkers showed a large range of emotional and behavioural problems and further indicators of impaired psychosocial functioning both in late adolescence and young adulthood. Conclusion: This Swiss community survey documents that alcohol use is problematic in a sizeable proportion of youth and goes hand in hand with a large number of psychosocial problems.

4.2. Background

The international trends in substance use and its determinants among youths have been analyzed in various recent reviews [1,2]. There can be no doubt that alcohol is

[3] Steinhausen, H.-C., Eschmann, S., Heimgartner, A., & Winkler Metzke, C. (2008). Frequency, course and correlates of alcohol use from adolescence to young adulthood in a Swiss community survey. *BMC Psychiatry, 8*, 5.

among the leading substances used and abused by adolescents and young adults. A European prevalence study based on data collected in 26 countries found the highest rates of drunkenness, binge drinking, and alcohol consumption among British, Danish, and Irish youths. Alcohol use and misuse was much more widely reported than illicit drugs [3].

Alcohol and nicotine use contributed most strongly to the unprecedented rise in youth drug use in Britain in the mid-1990s [1]. A German prospective longitudinal study with a large representative sample of adolescents and young adults found that cumulative lifetime incidence up to age 28 of any substance abuse or dependence was 44% and that the corresponding 12-month prevalence was 24%. In this study, nicotine dependence was most frequent (25%), followed by alcohol abuse (19%) and alcohol dependence (9%). Especially younger cohorts reported significantly earlier ages at onset of abuse and dependence [4].

In Switzerland, data were collected in collaboration with the HBSC (Health Behaviour in School-Aged Children) study under the auspices of WHO [5], in the SMASH (Swiss Multicenter Adolescent Survey on Health) [6], and in the ZAPPS (Zurich Adolescent Psychology and Psychopathology Study) [7]. All three studies converge in finding increasing rates of alcohol use and cannabis, and a trend for a closing gender gap with increasing age. Smoking, drunkenness and cannabis use greatly increased in 15-year-olds in Switzerland surveyed three times between 1986 and 1998 [8].

To date, there is only a small number of longitudinal studies that have taken a developmental perspective by studying the association of adolescent substance use with adult outcome [9-12] or the escalated substance use from early to middle adolescence [13]. Within the developmental perspective of adolescent substance use, various risk factors including life stress, personality features, parental behaviour, peer influences, school characteristics, and other environmental features have been studied as can be delineated from both major reviews and empirical studies [7,13-20].

The present study is aiming at further analysis of developmental patterns of alcohol use among youths. Two major issues were studied, namely, the study of the frequencies of alcohol use including sex effects and the associations between adolescent alcohol use and other behaviours both in adolescence and in young adulthood. In the latter approach, a typology of adolescent alcohol use was employed that had been established and validated in previous work [21].

4.3. Methods

4.3.1. Subjects

Originally, the present sample is based on a cohort of 1964 pupils aged 6 to 17 who were living in the Canton of Zurich, Switzerland in 1994. The cohort was a stratified randomized sample representing the 12 counties of the canton, the school grades, and the types of school and formed the basis of the Zurich Epidemiological Study of Child and Adolescent Psychopathology (ZESCAP). A full description of details of the sampling procedure was given in a previous article [22]. The preadolescents and adolescents (aged 11 – 17 years) of the ZESCAP sample (N = 1110) provided the basic cohort of the longitudinal Zurich Adolescent Psychology and Psychopathology Study (ZAPPS).

This original cohort of 1110 subjects was studied longitudinally at three times, namely, in 1994 (time 1), 1997 (time 2) and 2001 (time 3). At each time, a multidimensional screening based on various questionnaires measuring internalizing, externalizing, total problems, depression, eating disturbance, alcohol and other drug abuse was performed. In a second stage, structured psychiatric interviews were used with those subjects who scored above the cut-off scores and with a certain number of controls scoring below the cut-off score on each screening instrument. Assessments at time 1 and predominantly also at time 2 were performed at the schools of the participants. Questionnaires had to be mailed to a smaller part of older participants at time 2 and the entire cohort at time 3 because of having left school. At each stage of the study some subjects dropped out from the sample (e.g. after leaving school and not responding to mailed questionnaires) on both the screening and the interview level.

In order to work with a full data set including all data from both the screening and the interview stages and based on a sample that still was representative for local census data in terms of age and gender composition, the final longitudinal cohort with three waves of assessment was reduced to N = 593. There was a significantly higher loss of males across time (52.5% in the original cohort, 47.9% in the longitudinal sample, 57.8% in the dropouts, Chi2 = 10.95, df = 1, p < .01). Mean age was slightly though significantly higher in the drop-outs than in the participants of the longitudinal sample (13.92 vs.13.57 years, F = 13.66, df = 1, p < .001). More importantly, multivariate analyses indicated that the amount of emotional and behavioural problems as measured by the Youth Self Report (see below) was significantly different for dropouts as compared to participants (Wilks Lambda = .97; F = 4.89; df = 8,1082, p < .001). Drop-outs had significantly higher mean raw scores on scales measuring somatic problems (2.70 vs. 2.39, F = 4.6, df = 1, p < .05), attention problems (3.89 vs. 3.38, F = 10.7, df = 1, p < .01), delinquent behaviour (3.33 vs. 2.65, F = 27.2, p < .001), and aggressive behaviour (7.46 vs. 6.45, F = 13.5, df = 1, p < .001). Thus, there was some indication that older adolescent males with predominantly more externalizing problems were more likely to drop out from the study. However, all differences were relatively small in magnitude and became easily significant because of the large sample size.

Mean ages at the three times of the study were 13.6 (SD = 1.6), 16.6 (SD = 1.6), and 20.2 (SD = 1.7) years. The sample was composed of 284 (47.9%) males and 309 (52.1%) females. These 593 subjects were representative for the census population with regard to gender (Chi2 = 2.14, df = 1, p = n.s.) and biannual age distribution of 17 – 22 years olds (Chi2 = 2.67, df = 2, p = n. s.).

4.3.2. Measures

The ZAPPS is based on a theoretical model in order to study conditions and processes that are essential to the mental health of growing young people as well as to the development of mental problems and disorders. A broadband questionnaire was chosen in order to obtain information on relevant behavioural and emotional problems of adolescents. Furthermore, various questionnaires dealing with depression, abnormal eating behaviour, and substance abuse were also included. In order to analyze potential risk, compensatory, vulnerability, and protective factors of

psychopathology [23], life events were hypothetically seen as stressors, and various psychosocial variables including coping, self-related cognitions, and features of the social network were regarded as moderating factors with regard to behavioural and emotional problems.

Questionnaires were filled out confidentially by the subjects during school hours in 1994 and had to be mailed in 1997 and 2001. All questionnaires reflect raw scores and are positively keyed, i.e. high scores represent high expression of the content of the scale. All scales showed good to excellent reliability. A list of Alpha coefficients may be obtained from the authors.

Substance Use Questionaire (SUQ)

The questionnaire was designed by Müller and Abnet [24] in collaboration with the World Health Organization for a nationwide Swiss survey. It covers 22 items that deal both with the consumption of legal drugs and illegal drugs. Eight items deal with alcohol use by the respondent. The response format varied for the different items. Alcohol use was assessed via a general introductory question whether or not the adolescent had ever consumed alcohol (0 = no consumption, 1 = only a sip, 2 = an entire glass or more) and a detailed list of various alcoholic beverages with a response format ranging from 0 (no consumption) to 5 (daily consumption). Various subgroups were identified and a typology of adolescent alcohol use was validated [21]. The four types comprise abstainers, social drinkers, heavy drinkers, and problem drinkers. These four types are also relevant for the present study. Abstainers were negative on all items. Social drinkers were defined by three positive responses to the following items: I drink when I am in the company of friends/on the occasion of a family celebration/at a party. Heavy drinkers were defined by two positive responses to the following items: I drink until I feel high/until I get drunk. Problem drinkers had to respond positively to the following two items: I drink when I feel lonely/when I feel bad and having a problem.

Young Adult Self Report (YASR)

With the exception of the subscale measuring social problems and the inclusion of the subscale measuring intrusiveness the YASR [25] consists of the following primary subscales: socially withdrawn, somatic complaints, anxious/ depressed,

intrusiveness, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. Two second-order scales reflecting internalizing and externalizing can be calculated.

Life Event Scale (LES)

A total of 36 items were chosen from pre-existing questionnaires on life events. The time frame was defined as the twelve months prior to filling out the questionnaire. Beside frequencies of life events, a total impact score was calculated. This was based on a scale attached to each item ranging from -2 to +2 and indicating how unpleasant or pleasant the respective event was [26].

Coping Capacities (CC)

Our modified version of the German Coping Across Situations Questionnaire [27] addresses coping in four problem areas with school, parents, peers, and the opposite sex. Factor analysis resulted in two scales measuring active coping and avoidant behaviour.

Self-Related Cognitions (SRC)

The ten-item scale for the measurement of self-esteem by Rosenberg [28] and items from a German questionnaire assessing self-awareness [29] were further included into the questionnaire. The latter scale assesses introspective capacities for one's feelings, actions, and past.

4.3.3. Statistical Analyses

All questionnaire scores represent raw scores. Data were analysed by use of the 14th version of the SPSS (2006) program. Sex differences in alcohol use were analyzed by Chisquare tests. Comparisons between the various types of alcohol use were based on univariate and multivariate analyses of covariance (ANCOVA and MANCOVA) with sex and age as the controlled covariates. Stability of types of alcohol use across time was tested by the McNemar test.

4.4. Results

Figure 1 displays the development of any alcohol consumption across time. Around the age of 15 years more than half of the sample had drunken at least a glass of alcohol ever. Only at time 1 there were significant sex differences with males more likely to have consumed alcohol ($Chi2 = 6.33$, $df = 2$, $p < .05$). Weekly alcohol consumption is shown in Figure 2. Whereas around two per cent of the subjects showed weekly alcohol consumption in early adolescence at time 1, almost a third of young adults engaged in weekly alcohol consumption at time 3. There was only a trend for an excess of males at time 1 ($Chi2 = 5.40$, $df = 2$, $p = .07$) which became a significant difference at time 2 ($Chi2 = 9.90$, $df = 2$, $p < .01$) and time 3 ($Chi2 = 49.98$, $df = 2$, $p < .001$).

Data on the frequencies of drunkenness during the last two months are shown in Figure 3. There were no sex significant differences at times 1 and 2 in contrast to time 3 with more males having been drunk (52.6 vs. 29.9 per cent, $Chi2 = 42.59$, $df = 4$, $p < .001$). Furthermore, motives of drinking showed only few different distributions across time and for the two sexes as shown in Figure 4. At all three times, social events predominated among the various motives. However, there was an increasing proportion of young people who consumed alcohol in order to get drunk or feel high or when encountering problems. Both sexes did not show significant differences in alcohol consumption when encountering problems at all three times. On the other hand, more males than females drank in order to get drunk at time 2 ($Chi2 = 7.73$, $df = 2$, $p = .05$) and at time 3 ($Chi2 = 40.38$, $df = 2$, $p < .001$) or to feel high at time 3 ($Chi2 = 31.14$, $df = 2$, $p < .001$).

The negative consequences of alcohol use are shown in Figure 5 for times 2 and 3 only because they were not yet apparent at time 1. At both times, blackouts were experienced most frequently followed by deterioration of health, and troubles with family and friends. There were no significant sex differences at time 2. In young adulthood at time 3, the frequencies of negative consequences were increasing particularly for males. At time 3, more males than females reported to have been encountering a blackout ($Chi2 = 23.77$, $df = 2$, $p < .001$), some deterioration of health status ($Chi2 = 7.62$, $df = 1$, $p < .01$), to have received reprimands from school or superiors ($Chi2 = 4.36$, $df = 1$, $p < .05$), to have been close to or definitely been

involved in an accident (Chi2 = 7.51, df = 2, p < .05), and to have missed school or job due to alcohol consumption (Chi2 = 6.09, df = 1, p < .05).

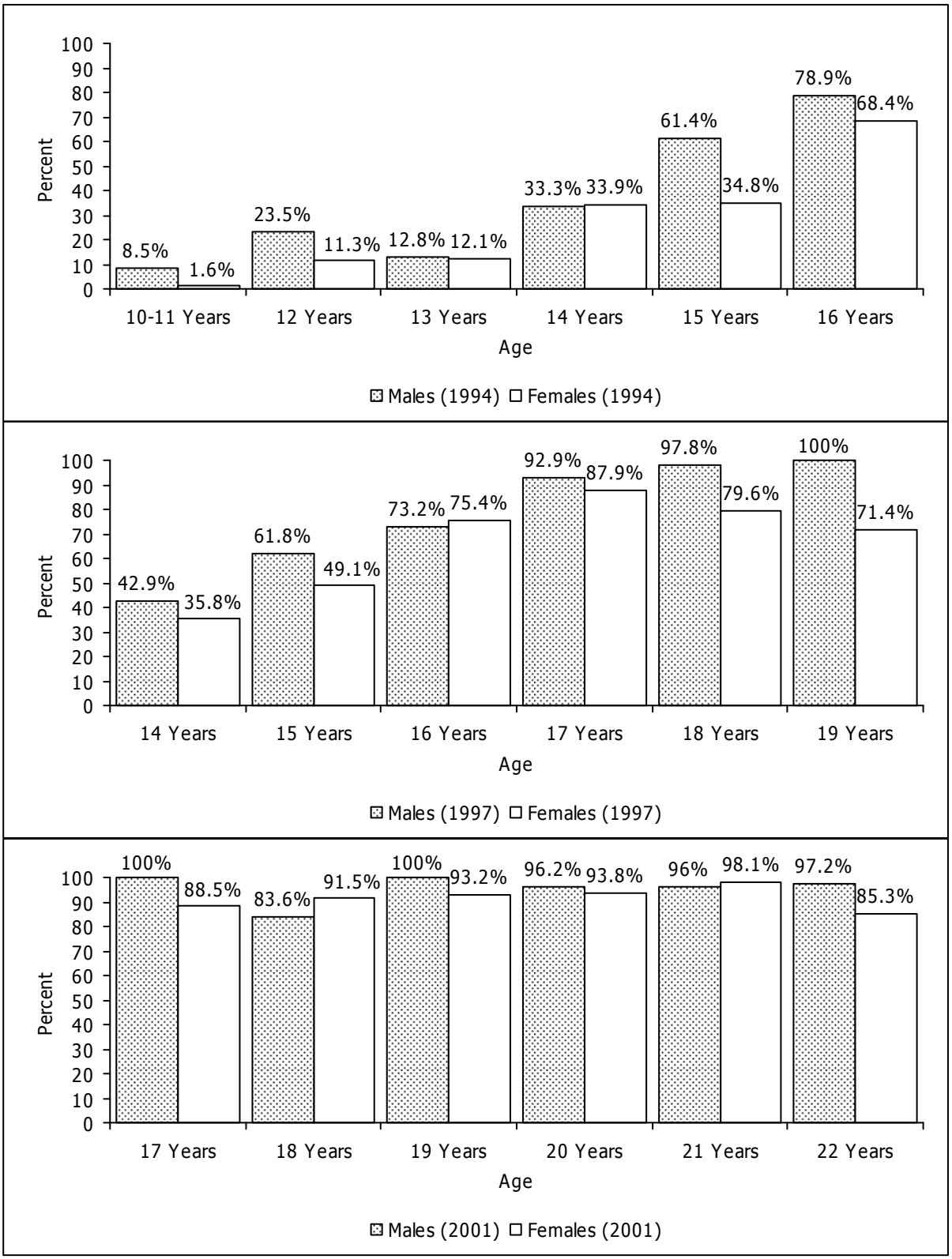

Figure 1: Frequencies of alcohol consumption (≥ 1 glass of alcohol) at three times.

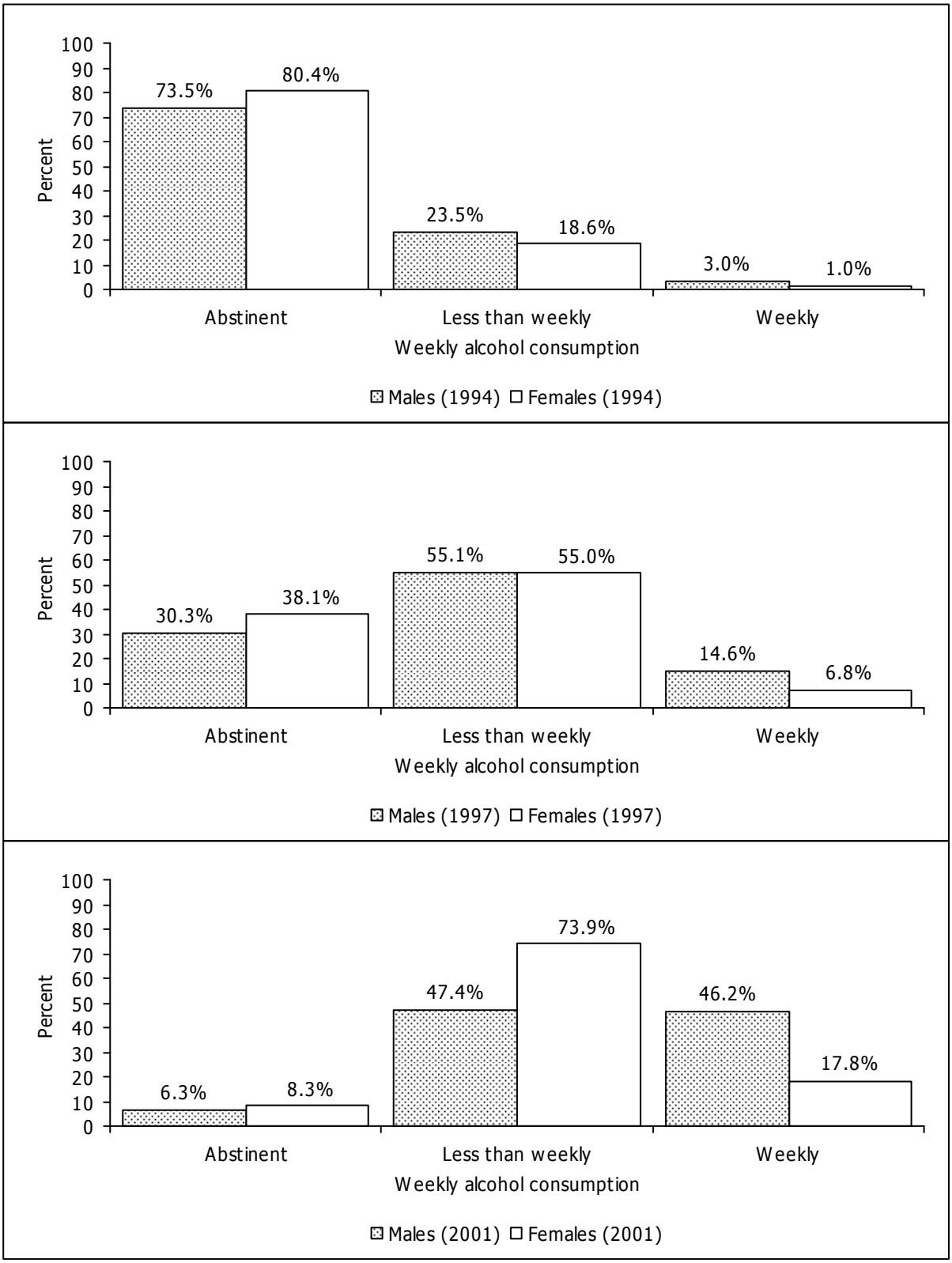

Figure 2: Weekly alcohol consumption at three times.

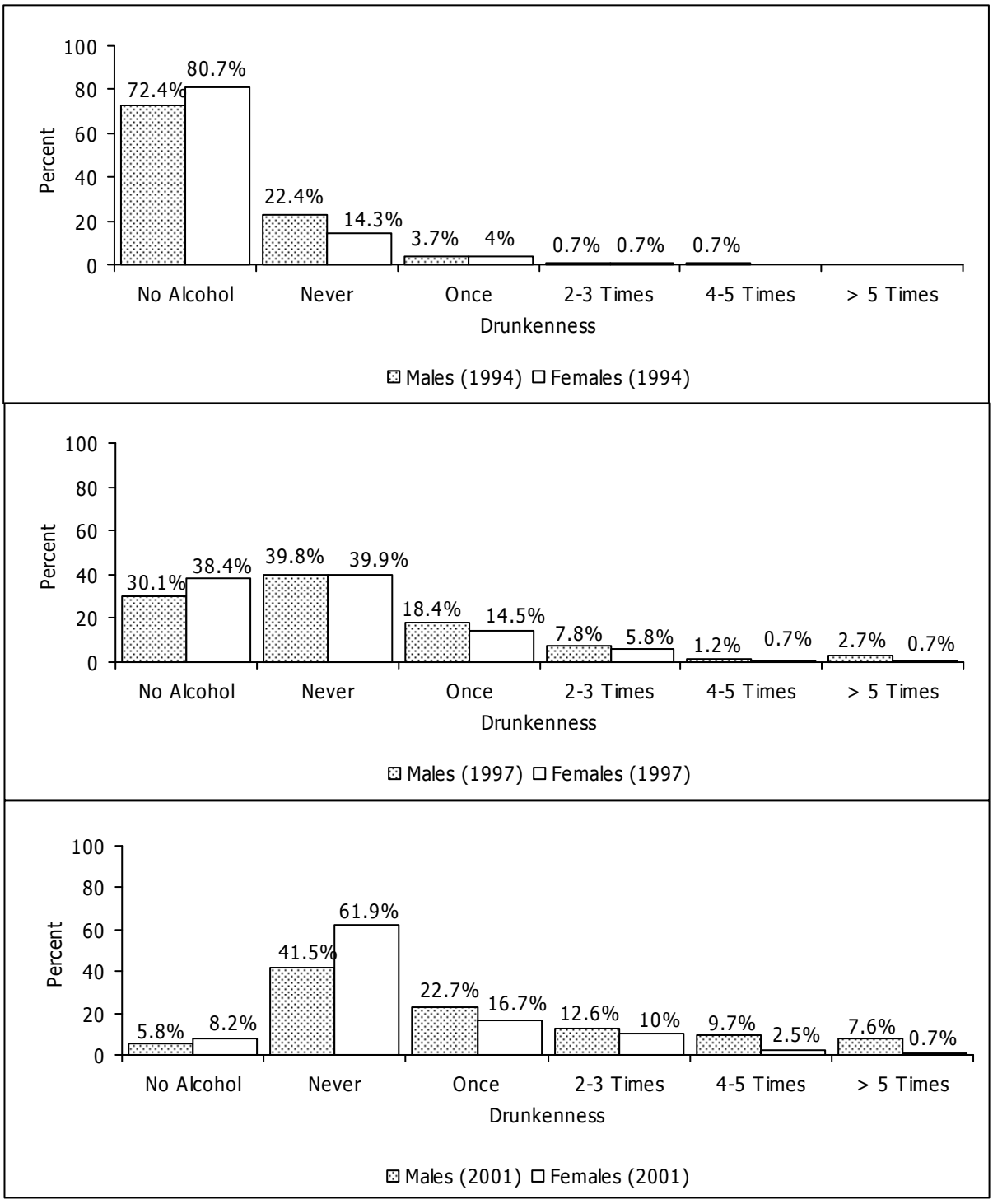

Figure 3: Frequencies of drunkenness at three times.

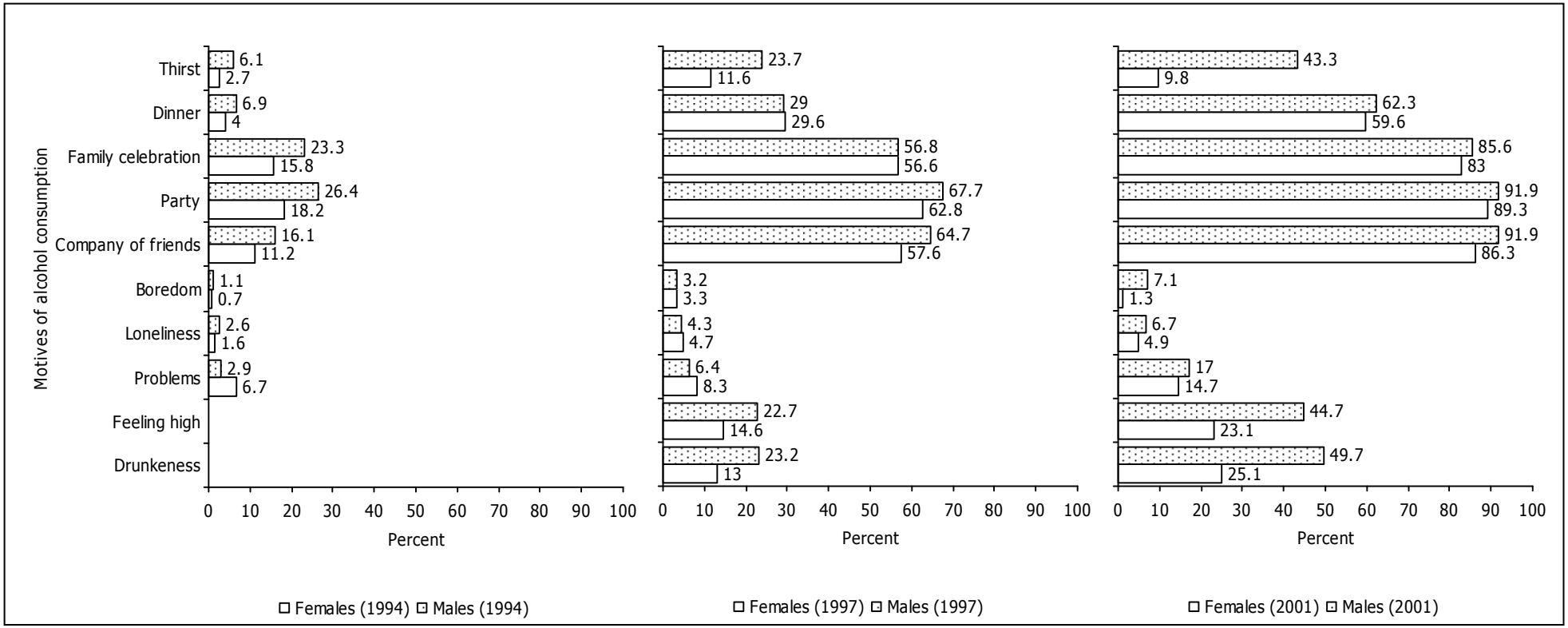

Figure 4: Motives of alcohol consumption at three times (“Feeling high” & “Drunkeness” were not asked at time 1).

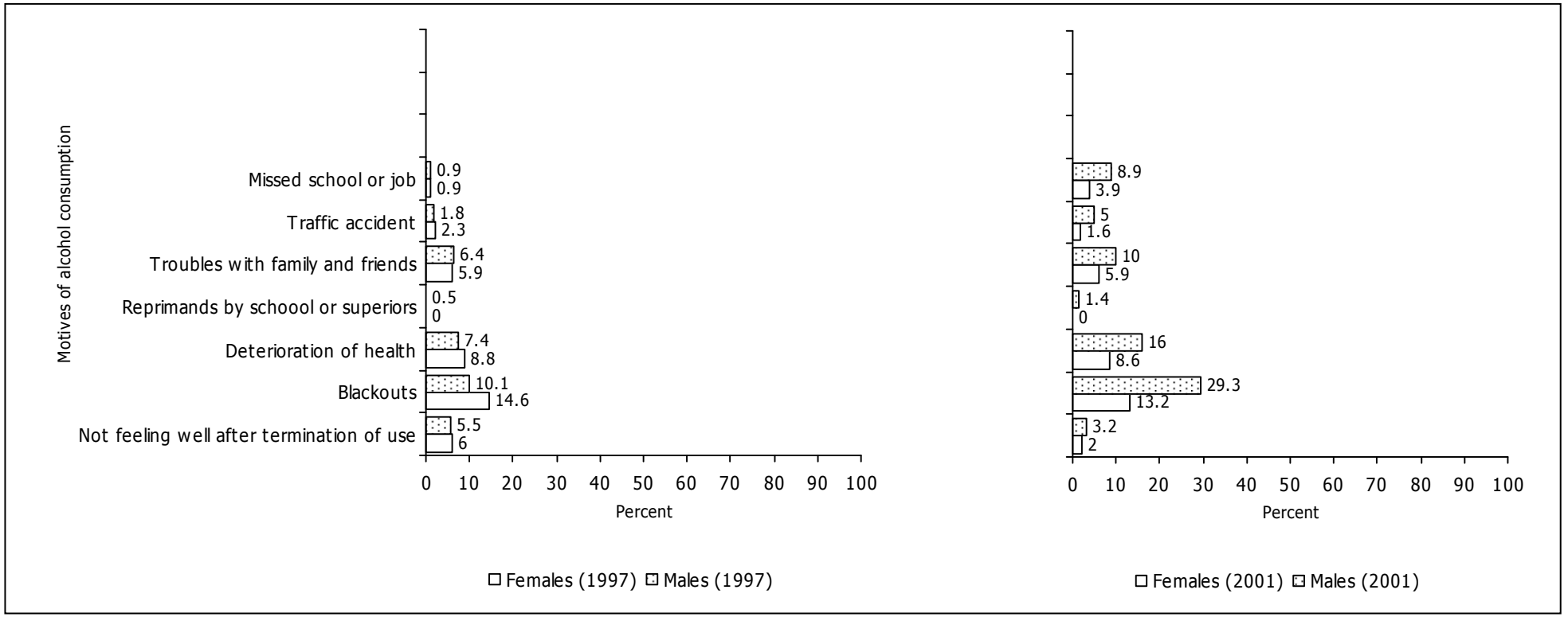

Figure 5: Negative consequences of alcohol consumption at times 2 and 3.

The four different types of adolescent alcohol use were identified only at times 2 and 3 because the subjects were still too young at time 1. There was a rather small number of either heavy or problem drinkers so that the two groups were combined. At time 2 in late adolescence there were 198 (33.4%) abstainers, 363 (61.2%) social drinkers, and 32 (5.4%) heavy or problem drinkers who, at the same time, were also engaged in social drinking. At time 3 in young adulthood, there were only 46 (7.6%) abstainers, but 505 (85.2%) social drinkers and 42 (7.1%) heavy or problem drinkers. Thus, both the numbers of social drinkers and heavy or problem drinkers increased over time. The changes across time were statistically highly significant for the three groups (Mc Nemar-Bowker Chi2 = 134.49, df = 3, $p < .001$).

The three types of adolescent alcohol use were compared at times 2 and 3 with regard to emotional and behavioural problems and further psychosocial correlates. Findings for emotional and behavioural problems at time 2 are shown in Table 1. Differences for the eight primary scales of the YSR were highly statistically different (Wilks Lambda = 0.76; F = 10.47; df = 16,1162; $p < .001$). There was an almost uniform pattern with the heavy or problem drinkers showing more problems than the two other groups of either abstainers or social drinkers. The former group had more somatic complaints, was more anxious depressed, had more thought problems and more attention problems, was more aggressive and showed more delinquent behaviour, and as a consequence also more internalizing and externalizing problems and a higher total score than the two other groups. Among the two latter groups there was less of a differentiation, with the social drinkers having an intermediate position between heavy or problem drinkers and abstainers with regard to aggressive and delinquent behaviours and as a consequence also externalizing problems.

Findings from comparisons of further psychosocial correlates are presented in Table 2. Again the heavy and problem drinkers stand out by a large number of statistically significant differences (Wilks Lambda = 0.81; F = 3.42; df = 38,1140; $p < .001$). Compared to the two other groups they had experienced a higher number and a more negative impact of life events, used less active and more avoidant coping, had less self-esteem but more self-awareness, felt less accepted and more rejected by both parents, and experienced more controlling teachers and less possibilities to participate at school. Again, the social drinkers had an intermediate position between

the two other groups with regard to the number and impact of life events, paternal acceptance, and possibilities to participate at school. The abstainers felt less parental control, less performance stress, and less peer acceptance than the social drinkers.

Further comparisons of emotional and behavioural problems among the three groups at time 3 are shown in Table 3. The findings from time 2 in late adolescence are clearly replicated in young adulthood. Again, the heavy or problem drinkers showed significantly more emotional and behavioural problems than the other two groups across all primary scales measuring social withdrawn, anxious/ depressed, intrusiveness, attention problems, aggressive behaviour, and delinquent behaviour. As a consequence, they had significantly more internalizing problems and a higher total score than the social drinkers and more externalizing problems than the two other groups. The social drinkers were less social withdrawn, less anxious/ depressed, and less inattentive than the abstainers and the latter had the lowest score with regard to attention problems and delinquent behaviours.

Because at time 3 questionnaires were mailed, instead of administered at school, the number of psychosocial variables that were assessed in young adulthood was more limited than at time 1 and 2. Findings are shown in Table 4. The multivariate analysis resulted in highly statistically significant differences (Wilks Lambda = 0.91; F = 3.41; df = 16,1162; $p < .001$). Across the set of variables the group of heavy or problem drinkers again stood out by having experienced a higher number of life events, and a less efficient social network than the two contrast groups. In terms of the greater negative impact of life events, the higher score of avoidant coping, and the smaller size of the social network they differed only from the social drinkers but not from the abstainers and together with the abstainers they were scoring lower than the social drinkers on scales measuring active coping and self-esteem.

4.5. Discussion

The findings of the present study are based on longitudinal assessments in a representative cohort of young Swiss people who were assessed three times for alcohol consumption and further psychosocial parameters between early adolescence and young adulthood. In a first step, the development of alcohol use

including frequencies, motives, and consequences were studied. From a starting point of a small minority of 8.5% of males and 1.6% of females who had consumed at least a single glass of alcohol at the age of 10 to 11 years, the proportion of youngsters consuming alcohol continuously progressed across time with three quarters having experienced alcohol use around the age of 16 years. Similarly, weekly consumption of alcohol progressed continuously over time with a third of adults drinking weekly and a clear male dominance with regard to the amount of alcohol consumption.

Whereas these findings represent developmental patterns with, so far, no clear indication of abnormality, there were some more worrisome results when focusing on the frequencies of drunkenness, the motives and the consequences of drinking. Drunkenness was still a rare event in early adolescence accounting only for some 5 percent of the participants of the survey, whereas a third of males and 21 percent of females in late adolescence and more than half of the males and slightly less than half of the females in young adulthood had been drunk at least once. In general, social events clearly predominated among the motives in the cohort. However, more than 20 percent of males and 13 to 15 percent of females drank in late adolescence in order to get drunk or feel high, and these figures increased to 45 to 50 percent in young adult males and to around a quarter in young adult females. The apparent male preponderance in these motives was not observed with regard to drinking when encountering problems at any time. The figures of this motive doubled from late adolescence to young adulthood up to a maximum of 17 percent of young adult males. Among various negative consequences, blackouts and deteriorations of health were noticed up to a maximum of 15 percent in adolescent females and 29 percent of young adult males.

In summary, these findings match conclusions from other recent Swiss surveys about a worrisome pattern of alcohol use among young people in the country, i.e. the HBSC (Health Behaviour in School-Aged Children) study under the auspices of WHO [5], the SMASH (Swiss Multicenter Adolescent Survey on Health) [6], and the repeated surveys in 15 year olds [8]. From these descriptive findings in the entire cohort, it had to be delineated that there was a sizeable subgroup of youths with highly problematic alcohol use. Based on previous work of the authors on the

identification and validation of different types of adolescent alcohol use [21] it was, thus, decided to study these types in more detail by analyzing the associations of type of alcohol use with emotional and behavioural problems and further psychosocial parameters which form the theoretical frame of the ZAPPS. Due to rather low frequencies the two types of heavy and problem drinkers had to be collapsed into a single combined group. First, it was found that this group had an increase from 5.4% in late adolescence to 7.1% in young adulthood indicating that persisting careers of problematic alcohol use start early in life. Secondly, at both times of the assessment in late adolescence and young adulthood, this group of heavy and problem drinkers was clearly different from the two contrast groups of abstainers and social drinkers. In this risk group compared to the two other groups there were stronger associations with emotional and behavioural problems and other psychosocial abnormalities including the experience of more life events and, particularly, more negative impact of these events, and abnormalities of personality including the use of more inadequate coping styles, less self-esteem, and greater selfawareness. In addition, this problematic risk group perceived less positive parenting style and a less attractive school environment during late adolescence, and a smaller and less efficient social network in young adulthood. The two other groups of abstainers and social drinkers were indistinguishable in many domains, and only in some domains the social drinkers had an intermediate position between the risk group and the abstainers. Interestingly, in a few domains the abstainers were more similar to the heavy and problem drinkers than to the social drinkers.

4.6. Conclusion

The heavy and problem drinkers stood out as a clearly most abnormal group in terms of its psychosocial characteristics. One may well conclude that their alcohol use was both a way of reflecting and contributing to their life that was marked by a higher amount of psychosocial stressors and deficits in coping and support. These findings converge with other reports obtained with other samples in different regions and some major recent reviews. Within a developmental perspective, all these publications have stressed the importance of various risk factors including life stress, inefficient coping, non-supportive parental behaviour, inadequate school

characteristics, and other environmental features as contributing factors to adolescent substance abuse [7,13-19].

In terms of limitations, it should be noted that the longitudinal sample was not completely representative of the original cohort because slightly older males with more externalizing problems were more likely to drop out from the longitudinal study. Thus, one may argue that particularly the findings on gender and associated behavioural problems represent a rather conservative picture. However, this limitation is counterbalanced by the fact that the longitudinal sample was representative in terms of age and gender composition according to local census data. Furthermore, the present study was based on a survey that looked for indicators of problematic alcohol use but was not in a position to come up with clinically based diagnoses of alcohol abuse. Thus, comparisons with other European studies reporting rates of alcohol abuse with different assessment methods [4] are impossible. On the other hand, the present study provides further evidence that problematic alcohol use among youths is frequent and associated with a variety of mental and psychosocial problems. Early prevention in adolescence is clearly warranted.

Table 1: Comparison of Emotional and Behavioral Problems of the Three Subsamples at Time 2 in 1997

	Abstainers (0) Total (N=198)		Social drinkers (1) Total (N=363)		Heavy and Problem drinkers (2) Total (N=32)		F	
	Mean	SD	Mean	SD	Mean	SD	Groups (df =2)	Post-hoc Scheffé Test
Social Withdrawn	2.96	2.39	2.60	2.22	3.93	2.77	7.25**	2 > 1
Somatic Complaints	2.28	2.14	2.63	2.35	4.21	2.82	12.20***	2 > 0, 1
Anxious/Depressed	5.19	4.21	5.11	4.35	8.31	5.45	8.10***	2 > 0, 1
Social Problems	2.01	2.10	1.38	1.69	2.14	2.70	8.29***	0 > 1
Thought Problems	1.86	1.83	1.97	1.92	3.81	2.51	15.31***	2 > 0, 1
Attention Problems	3.57	2.57	3.65	2.49	6.24	4.12	15.31***	2 > 0, 1
Aggressive Behavior	5.77	3.90	6.91	4.14	10.18	4.52	22.58***	2 > 1 > 0
Delinquent Behavior	2.41	1.85	3.68	2.25	6.42	2.46	61.42***	2 > 1 > 0
Internalizing	10.07	7.10	9.92	7.32	15.72	8.93	9.51***	2 > 0, 1
Externalizing	8.18	5.21	10.59	5.64	16.60	5.85	43.21***	2 > 1 > 0
Total Score	29.91	17.01	32.36	17.26	51.75	21.72	23.10***	2 > 0, 1

*p < .05 **p < .01 ***p < .001

Table 2: Comparison of Psychosocial Correlates of the Three Subsamples at Time 2 in 1997

	Abstainers (0) Total (N=198)		Social drinkers (1) Total (N=363)		Heavy and Problem drinkers (2) Total (N=32)		F Groups (df =2)	Post-hoc Scheffé Test
	Mean	SD	Mean	SD	Mean	SD		
Number of Live Events	4.39	2.94	5.82	3.34	8.08	3.80	20.90***	2 > 1 > 0
Life Events Impact	-5.12	4.21	-6.32	4.84	-8.81	5.27	10.12***	2 < 1 < 0
Active Coping	4.92	1.16	4.91	1.18	4.16	1.43	7.06**	2 < 1, 0
Avoidant Coping	2.57	1.43	2.71	1.41	3.36	1.13	6.90**	2 > 1, 0
Self-Esteem	27.58	5.85	27.74	5.96	22.42	6.72	12.28***	2 < 1, 0
Self-Awareness	19.89	5.37	20.05	5.55	22.81	5.31	4.08*	2 > 1, 0
Maternal Acceptance	28.48	5.50	27.30	5.95	24.44	6.59	7.77***	2 < 1, 0
Maternal Rejection	5.32	4.12	5.69	4.45	7.71	4.39	7.15**	2 > 1, 0
Maternal Control	10.56	3.90	9.58	3.84	9.19	3.75	0.57	1 < 0
Paternal Acceptance	26.53	5.69	24.72	6.90	21.44	7.52	9.46***	2 < 1 < 0
Paternal Rejection	5.25	3.57	5.75	4.28	8.14	5.26	9.37***	2 > 1, 0
Paternal Control	9.61	3.77	8.58	3.65	8.20	5.03	0.33	1 < 0
Competition at School	7.56	4.58	8.06	4.83	9.69	5.04	3.51*	-
Controlling Teachers	13.27	5.77	13.69	5.91	17.22	6.97	11.47***	2 > 1, 0
Possibilities to Participate	16.57	3.65	15.36	4.29	12.44	5.28	12.73***	2 < 1 < 0
Performance Stress	7.61	3.58	8.55	3.87	9.06	4.01	2.91	1 < 0
Peer Acceptance	14.27	3.50	15.24	3.15	14.56	3.93	4.35*	1 < 0
Size of Social Network	21.84	5.95	21.05	6.30	19.41	6.14	1.25	-
Efficiency of Social Network	21.84	3.23	21.62	3.16	20.46	3.60	2.22	-

*p < .05 **p < .01 ***p < .001

Table 3: Comparison of Emotional and Behavioral Problems of the Three Subsamples at Time 2 in 2001

	Abstainers (0) Total (N=46)		Social drinkers (1) Total (N=505)		Heavy and Problem drinkers (2) Total (N=42)		F Groups (df =2)	Post-hoc Scheffé Test
	Mean	SD	Mean	SD	Mean	SD		
Social Withdrawn	4.48	3.25	1.97	1.87	2.35	2.18	35.29***	2, 1 < 0
Somatic Complaints	2.58	2.56	2.25	2.36	3.22	3.11	5.88**	2 > 1
Anxious/Depressed	8.20	5.94	5.95	4.86	8.35	6.52	9.14***	2, 0 > 1
Intrusiveness	1.96	1.94	2.28	1.94	3.33	2.00	4.73**	2 > 0, 1
Thought Problems	0.40	0.88	0.23	0.65	0.79	1.38	10.93***	2 > 1
Attention Problems	2.76	2.38	1.88	1.90	3.15	2.25	11.06***	2 > 1 > 0
Aggressive Behavior	2.71	2.56	2.48	2.30	3.97	3.26	6.98**	2 > 1, 0
Delinquent Behavior	0.87	1.32	1.77	1.98	4.57	3.14	36.15***	2 > 1 > 0
Internalizing	12.68	8.49	7.92	6.15	10.70	7.91	14.68***	2, 0 > 1
Externalizing	5.54	4.54	6.54	4.75	11.88	6.42	20.93***	2 > 0, 1
Total Score	36.74	22.81	28.66	17.20	44.08	23.76	16.78***	2, 0 > 1

*p < .05 **p < .01 ***p < .001

Table 4: Comparison of Psychosocial Correlates of the Three Subsamples at Time 3 in 2001

	Abstainers (0) Total (N=46)		Social drinkers (1) Total (N=505)		Heavy and Problem drinkers (2) Total (N=42)		F Groups (df =2)	Post-hoc Scheffé Test
	Mean	SD	Mean	SD	Mean	SD		
Number of Live Events	4.52	3.43	5.04	3.29	6.48	4.36	4.34*	2 > 0, 1
Life Events Impact	-5.32	4.60	-5.86	4.81	-7.83	7.06	4.54*	1 > 2
Active Coping	5.06	1.16	5.45	0.97	5.02	1.03	5.18**	1 > 0, 2
Avoidant Coping	2.87	1.18	2.62	1.07	3.11	1.16	4.73**	1 < 2
Self-Esteem	24.00	6.27	26.60	5.04	24.06	6.02	10.26***	1 > 0, 2
Self-Awareness	19.48	5.40	18.81	4.90	18.94	5.45	0.83	-
Size of Social Network	21.69	6.88	22.43	7.07	18.60	5.33	4.27*	1 > 2
Efficiency of Social Network	21.94	3.85	22.83	3.23	20.01	3.56	11.30***	2 < 0, 1

*p < .05 **p < .01 ***p < .001

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5. Teilprojekt 3: Manuskript 4: Continuity, Psychosocial Correlates, and Outcome of Problematic Substance Use from Adolescence to Young Adulthood in a Community Sample[4]

5.1. Abstract

Background: The study of the continuity, psychosocial correlates, and prediction of problematic substance use (PSU) across time from adolescence to young adulthood.

Methods: Substance use was studied in a cohort of N = 593 subjects who had been assessed at three times between adolescence and young adulthood within the Zurich Psychology and Psychopathology Study (ZAPPS). Based on the frequency of tobacco, alcohol, and cannabis consumption, groups with PSU were defined at each of the three measurement points in time and compared to the rest of the sample. Comparisons included questionnaire data regarding emotional and behavioural problems, life events, coping style, self-related cognitions, perceived parenting style, perceived school environment, and size and efficiency of the social network.

Results: The size of the groups with PSU increased continuously across time. The cross-sectional correlates of PSU were characterized by a similar pattern that included higher scores for externalizing behaviour, and both number and negative impact of life events across all three times. At time 1 and 2 subjects with PSU also experienced less favourable parenting styles and school environments. Longitudinally, PSU in young adulthood was predicted most strongly and persistently by previous risk status, externalizing problems and male gender.

Conclusion: Problematic substance use is a major problem in youth. Its contributing pattern of associated and predictive psychosocial variables can be identified in the community.

5.2. Introduction

In a recent review of drug abuse research it has been stated that some of the advancements parallel concepts that are also part of the developmental psychopathology approach. Among various research areas, this perspective includes

[4] Steinhausen, H.-C., Eschmann, S., & Winkler Metzke, C. (2007). Continuity, psychosocial correlates, and outcome of problematic substance use from adolescence to young adulthood in a community sample. *Child Adolesc Psychiatry Ment Health, 1*(1), 12.

antecedent and co-occurring psychopathological conditions and other problem behaviour [1]. To date, there is only a small number of longitudinal studies that have taken this perspective by studying the association of adolescent substance use with adult outcome [e.g. [2-5]] or the developmental antecedents, patterns, and correlates of substance use in adolescence [6-10].

Within the developmental perspective of adolescent substance use, various risk factors including life stress, personality features, parental behaviour, peer influences, school characteristics, and other environmental features have been studied as can be delineated from both major reviews and empirical studies [6,11-17]. The frequent co-occurring mental disorders and behaviour problems have been addressed particularly in another series of recent reviews with a strong emphasis on co-morbid conduct disorders or externalizing problems [13,18-20].

The present study attempted to shed some more light on the developmental trajectories of substance use from adolescence to young adulthood. Based on data from a longitudinal study, the main focus was on problematic substance use rather than on substance use disorders. In accordance with various studies, weekly or daily consumption of tobacco and/or alcohol, problem and heavy drinking aiming at drunkenness, and cannabis use more frequently than three times in the past month was considered to reflect problematic substance use [21]. The major aim of the present study was the analysis and predictive power of selected psychosocial correlates across time in subjects with problematic substance use (PSU). The psychosocial correlates of the longitudinal study had been selected on the basis of a theoretical model that will be outlined with the methods below.

Three main questions were addressed in the analyses. First, the continuity of PSU across time was studied. The second series of cross-sectional analyses compared psychosocial correlates in the PSU groups at each time with the rest of the sample representing the controls. The third question asked for preceding psychosocial markers during middle and late adolescence of later PSU in young adulthood and was, thus, using the longitudinal data.

5.3. Method

5.3.1. Subjects

Originally, the present sample is based on a cohort of N = 1,964 pupils aged 6 to 17 who were living in the Canton of Zurich, Switzerland in 1994. The cohort was a stratified randomized sample representing the 12 counties of the canton, the school grades, and the types of school and formed the basis of the Zurich Epidemiological Study of Child and Adolescent Psychopathology (ZESCAP). A full description of details of the sampling procedure was given in a previous article [22]. The preadolescents and adolescents (aged 11 – 17 years) of the ZESCAP sample (N = 1110) provided the basic cohort of the longitudinal Zurich Adolescent Psychology and Psychopathology Study (ZAPPS).

This cohort of 1110 subjects was studied longitudinally at three times, namely, in 1994 (time 1), 1997 (time 2) and 2001 (time 3). At each time, a multidimensional screening based on various questionnaires was performed. Subsequently, structured psychiatric interviews were used with those subjects who scored above the cut-off scores and with a certain number of controls scoring below the cut-off score on each screening instrument. Due to the screening procedure the sample was reduced at each time. In addition, subjects dropped out from the sample (e.g. after leaving school) on both the screening and the interview level. At the interview stage compared to the screening stage, a larger proportion of subjects and, particularly, more males than females dropped out. In order to work with a full data set including all questionnaires and interviews based on a sample that still was representative for local census data, the final longitudinal cohort with three waves of assessment was reduced to N = 593. Mean ages of this longitudinal cohort at the three times of assessment were 13.6 (SD = 1.6), 16.6 (SD = 1.6), and 20.2 (SD = 1.7) years. The sample was composed of 284 (47.9%) males and 309 (52.1%) females. These 593 subjects were representative for the census population with regard to gender (Chi2 = 2.14, df = 1, p = n.s.) and biannual age distribution of 17 – 22 years olds (Chi2 = 2.67, df = 2, p = n.s.).

Subjects with problematic substance use in this sample had to fulfil the following criteria: weekly or daily consumption of tobacco, daily alcohol consumption or heavy or problem drinking according to the definition that is given below in the description of

the substance use questionnaire, and three or more times use of cannabis during the last month. At time 1, a total of N = 30 subjects were identified who met at least one of these criteria. There were 13 (43%) males and 17 (57%) females in this subsample. At time 2, based on the same criteria a total of N = 155 participants were identified who were considered to be subjects. There were 79 (50.1%) males and 76 (49.9%) females in this sub-sample. At time 3, a third PSU group based on the same criteria was defined. This sub-sample comprised a total of N = 290 subjects including 160 (55.2%) males and 130 (44.8%) females. At each time, the rest of the cohort without problematic substance use served as control group. The PSU group was significantly older than the controls at time 1 (15.1 vs.13.5, t = 7.99, df = 36.9, p < .001) and time 2 (17.0 vs.16.4, t = 4.32, df = 299, p < .001) but not at time 3 (20.2 vs. 20.2, df = 591, p = n.s.).

5.3.2. Measures

The ZAPPS is based on a theoretical model in order to study conditions and processes that are essential to the mental health of growing young people as well as to the development of mental problems and disorders. A broad-band questionnaire was chosen in order to obtain information on relevant behavioural and emotional problems of adolescents. Furthermore, various questionnaires dealing with depression, abnormal eating behaviour, and substance abuse were also included. In order to analyze potential risk, compensatory, vulnerability, and protective factors of psychopathology [23], life events were hypothetically seen as stressors, and various psychosocial variables including coping, self-related cognitions, and features of the social network were regarded as moderating factors with regard to behavioural and emotional problems. Questionnaires were filled out confidentially by the subjects during school hours in 1994 and had to be mailed in 1997 and 2001. All questionnaires reflect raw scores and are positively keyed, i.e. high scores represent high expression of the content of the scale.

Substance Use Questionaire (SUQ)

The questionnaire was designed by Müller and Abnet [24] in collaboration with the World Health Organization for a nationwide Swiss survey. It covers 22 items that deal both with the consumption of legal drugs and illegal drugs. Nicotine use of both the respondent and his parents is covered by five items. A further eight items deal with

alcohol use by the respondent. The response format varied for the different items. The introductory question for nicotine use inquired whether or not the respondent had ever smoked at least one cigarette. For frequency of current nicotine use the scale ranged from "does not apply = 0" to "daily = 3". Alcohol use was assessed via a general introductory question (0 = no consumption, 1 = only a sip, 2 = an entire glass or more) and a detailed list of various alcoholic beverages with a response format ranging from 0 (no consumption) to 5 (daily consumption). Various subgroups were identified and a typology of adolescent alcohol use was validated [21] Two types are relevant for the present study. Heavy drinkers were defined by two positive responses to the following items: I drink until I feel high/until I get drunk. Problem drinkers had to respond positively to the following two items: I drink when I feel lonely/when I feel bad and having a problem.

Youth Self Report (YSR)

The problem behaviour section of the YSR [25] and its Swiss adaptation [26] consists of the following primary subscales: socially withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. Two second-order scales reflecting internalizing and externalizing can be calculated. Only these two dimensions were considered in the present analyses. Alpha coefficients of internal consistency for the two scales at the two times ranged from .81 to .87.

Young Adult Self Report (YASR)

With the exception of the subscale measuring social problems and the inclusion of the subscale measuring intrusiveness the YASR [27] consists of the same primary and secondary dimension as the YSR [28]. The YASR was used at time 3 (2001) and only the internalizing and externalizing problem scores were considered in the present analyses. The Alpha coefficients amounted to .89 and .80, respectively.

Life Event Scale (LES)

A total of 36 items were chosen from pre-existing questionnaires on life events. The time frame was defined as the twelve months prior to filling out the questionnaire. Beside frequencies of life events, a total impact score was calculated. This was based on a scale attached to each item ranging from -2 to +2 and indicating how

unpleasant or pleasant the respective event was [29]. The alpha coefficients of internal consistency for the total number of life events ranged from .71 to .73 and for the total impact score from 0.71 to 0.84.

Coping Capacities (CC)

Our modified version of the German Coping Across Situations Questionnaire [30] addresses coping in four problem areas with school, parents, peers, and the opposite sex. Factor analysis resulted in two scales measuring active coping and avoidant behaviour. The CC was used at times 1 and 2 and the alpha coefficients of internal consistency for the two scales ranged from .56 to .70.

Self-Related Cognitions (SRC)

The ten-item scale for the measurement of self-esteem by Rosenberg [31] and items from a German questionnaire assessing self-awareness [32] were further included into the questionnaire. The latter scale assesses introspective capacities for one's feelings, actions, and past. Alpha coefficients for the two scales across the three assessments ranged from 0.77 to 0.89. The SRC was used at all three times.

Perceived Parental Behaviour (PPB)

Based on pre-existing literature, we developed an inventory that consisted of 32 items [33]. Factor analysis resulted in 3 factors explaining 34% of the variance for mothers and 35% of the variance for the fathers. The 3 scales were labelled "acceptance" (e. g., "my mother/father praises me when I do something good"), "rejection" (e. g. "my mother/father easily becomes upset if I don't do what she/he says") and "control" (e. g. "my mother/father has clear rules for my behaviour"). These scales were used only at time 1 and time 2. Alpha coefficients of internal consistency ranged between 0.68 and 0.89.

Perceived School Environment (PSE)

These scales were derived from a German project on development in adolescence [34] and consist of 32 items that deal with the perceived psychosocial qualities of the school environment. Our own factorial analyses re-identified the 5 factors labelled "competition among students" (e. g. "in our class, each student tries to be more successful than the other"), "control by the teacher" (e. g. "many of our teachers treat

us like small children"), "performance stress" (e. g. "we hardly manage our homework"), "possibility to participate " (e. g. "our teachers ask for our opinion before deciding"), and "peer acceptance" (e. g. "I consider myself to be one of the most accepted students in our class"). These scales were used only at time 1 and time 2. The resulting scales had Alpha coefficients of between .65 and .79 at the two times of assessment.

Social Network (SN)

These newly developed scales cover six situations in which emotional or instrumental support is required. For each situation, the questionnaire asks whether or not 9 close individuals (family members, relatives, friends, and teachers) provide support. In addition, the efficiency of each of these individuals is also rated. Factor analyses across situations revealed 2 stable dimensions, namely size and efficiency of the social network with alpha coefficients ranging from .70 to .87 across the three times of assessment.

5.3.3. Statistical Analyses

All questionnaire scores represent raw scores. Data were analysed by use of the 14th version of the SPSS (2006) program. Continuity of substance abuse at risk groups was tested by use of the McNemar Test. Comparisons between risk groups and controls were based on univariate and multivariate analyses of covariance (ANCOVA and MANCOVA) with sex and age as the controlled covariates. Logistic regression analyses were performed stepwise with forward selection in order to identify those variables that allowed the best prediction of cross-sectional and longitudinal risk status.

5.4. Results

The size of the groups with PSU steadily increased from 5.1% risk subjects at time 1 to 26.1% subjects at time 2 and 48.9% subjects at time 3. There was significant continuity from time1 to time 2 with 25/30 (83%) of persistent subjects with PSU compared to 130/563 (23%) of subjects who newly developed PSU (McNemar Test $p < .001$). In the same way, the PSU group at time 1 showed significantly more PSU also at time 3 (28/30 subjects; 93%) than the control group from time 1 (262/563

subjects; 47%; McNemar Test p < .001). Continuity from time 2 to time 3 was also highly significant with 131/155 (85%) of the subjects with previous PSU showing ongoing PSU whereas only 159/438 (36%) developed PSU de novo (McNemar p < .001). There were also significant gender effects. At time 1, boys were less frequent than girls in the PSU group (13/30 vs. 17/30) and the controls (271/563 vs. 292/563) (McNemar p < .001) whereas males were more frequent among the adolescents at time 2 in the PSU group (79/155 vs. 76/155) and less frequent in the control group (205/437 vs. 233/437) (McNemar p < .001). At time 3 there were no significant gender effects. Furthermore, the PSU group was significantly older than the controls at time 1 (Mean = 15.1, SD = 1.0 vs. Mean = 13.5, SD = 1.6, t = -7.99, df = 36.9, p < .001) and also at time 2 (Mean = 17.0, SD = 1.5 vs. Mean = 16.4, SD = 1.6, t = -4.32, df = 299, p < .001). There were no significant age differences between the two groups at time 3.

Table 1: Comparisons of Emotional and Behavioural Problems (raw scores) at Time 1, Time 2, and Time 3 (N=593)

	Problematic Substance Use Group		Control Group		
	Total		Total		F
YSR/YASR Secondary Scales	Mean	SD	Mean	SD	(df = 1)
Time 1	(N=30)		(N=563)		
Internalizing	10.82	6.34	9.05	6.27	2.47
Externalizing	15.24	5.96	9.58	5.73	32.13***
Time 2	(N=155)		(N=438)		
Internalizing	11.40	7.91	9.89	7.24	4.82*
Externalizing	13.68	6.23	8.84	5.12	99.59***
Time 3	(N=290)		(N=303)		
Internalizing	8.59	6.55	8.39	6.72	0.23
Externalizing	8.52	5.60	5.23	3.87	61.46***

*p < .05 **p < .01 ***p < .001

In the second step, a series of cross-sectional comparisons between each risk group and the controls was made at each time. Besides significant group effects, there were a large number of significant sex and age effects including interactions of these variables with group. A full presentation of these findings is beyond the scope of this

paper. Thus, the presentation will be restricted to group differences based on analyses that took sex and age as covariates into account. Table 1 shows the comparison of emotional and behavioural problems at all three times. As can be seen, the PSU group had highly significantly higher scores for externalizing behaviour at each time whereas there were significant differences for internalizing behavior only at time 2.

A comparison of the two groups at time 1 with regard to further psychosocial variables is shown in table 2. The PSU group had significantly more life events including a more negative life event impact, and perceived less maternal acceptance, more maternal rejection, more paternal rejection, and more controlling teachers. The corresponding findings for time 2 are shown in table 3. Again, the PSU group experienced a higher number of life events and more negative life events impact, more use of avoidant coping, less parental acceptance and more parental rejection, more controlling teachers, and fewer possibilities to participate at school, but felt more accepted among peers. The pattern of a higher number of life events including a more negative impact of these life events in the PSU group was also seen at time 3 as documented in table 4.

Following these multivariate comparisons of PSU groups and controls, a series of cross-sectional logistic regression analyses was performed in order to identify the strongest predictors of substance use at risk at each time. Findings are shown in table 5. At both times during adolescence, higher age and externalizing problems were strong predictors of PSU. During early adolescence at time 1 there was a strong contribution coming from negative parenting variables to the regression equation, whereas in later adolescence at time 2 it was avoidant coping, perceived lacking possibilities to participate at school, and peer acceptance that contributed to the prediction of PSU. In young adulthood at time 3, only behavioural and emotional problems as reflected by low scores of internalizing and high scores of externalizing problems were predictive of PSU. The overall percentage of correct classification declined from each time to the next time of assessment.

Table 2: Comparisons of Psychosocial Correlates of Risk Group and Control Group at Time 1 in 1994

	Problematic Substance Use Group Total (N=30)		Control Group Total (N=563)		F
	Mean	SD	Mean	SD	(df = 1)
Number of Live Events	7.27	3.69	4.36	2.97	19.22***
Life Events Impact	-8.21	5.32	-4.75	4.34	14.60***
Active Coping	5.06	1.37	4.90	2.20	0.00
Avoidant Coping	2.82	1.21	2.71	2.22	0.79
Self-Esteem	25.78	5.33	26.84	5.71	1.64
Self-Awareness	21.70	5.93	18.70	6.69	3.74
Maternal Acceptance	25.00	6.28	28.40	5.59	9.81**
Maternal Rejection	8.50	5.19	6.61	4.38	8.74**
Maternal Control	12.00	3.37	11.23	3.51	2.75
Paternal Acceptance	26.92	18.03	26.64	7.12	0.04
Paternal Rejection	9.41	14.10	6.66	5.27	6.13*
Paternal Control	10.18	9.16	10.31	4.00	0.00
Competition at School	1.44	0.65	1.18	0.73	4.78*
Controlling Teachers	1.99	0.60	1.58	0.72	11.80**
Possibilities to Participate	2.50	0.75	2.66	0.74	2.74
Performance Stress	1.67	0.84	1.24	0.78	3.48
Peer Acceptance	2.92	0.58	2.79	0.71	0.20
Size of Social Network	21.09	5.57	20.60	6.09	0.13
Efficiency of Social Network	21.90	3.30	22.63	3.17	0.37

Group effect: Wilks Lambda=0.91; F=3.12; df=19/571; p<0.001
*p < .05 **p < .01 ***p < .001

Longitudinal analyses looked for time 1 and time 2 predictors of PSU at time 3. Results may be seen in table 6. Amongst the various variables that were assessed in early adolescence at time 1, PSU, low scores on the internalizing dimension, high score on the externalizing dimension, self-awareness, a lack of perceived possibilities to participate at school, and male gender allowed a significant prediction of PSU at time 3 in young adulthood. At time 2 in late adolescence the significant predictors were PSU again that was supplemented by externalizing problems, perceived paternal acceptance, and male gender.

When data from both times in adolescence were used for prediction the following variables allowed a significant prediction of PSU at time 3: PSU both at time 1 and 2, low scores on the internalizing dimension at time 1, externalizing problems at time 1, self-awareness at time 1, perceived paternal acceptance at time 2, and male gender.

Table 3: Comparisons of Psychosocial Correlates of Risk Group and Control Group at Time 2 in 1997

	Problematic Substance Use Group Total (N=155)		Control Group Total (N=438)		F
	Mean	SD	Mean	SD	(df = 1)
Number of Live Events	6.78	3.58	5.00	3.15	31.20***
Life Events Impact	-7.42	5.26	-5.57	4.44	18.08***
Active Coping	4.74	1.23	4.92	1.87	3.60
Avoidant Coping	2.98	1.24	2.60	1.46	11.67**
Self-Esteem	26.69	6.24	27.65	6.00	3.64
Self-Awareness	20.72	5.33	19.94	5.56	1.70
Maternal Acceptance	25.93	6.28	28.11	5.66	15.98***
Maternal Rejection	6.46	4.45	5.40	4.30	10.32**
Maternal Control	9.60	3.94	9.99	3.86	0.25
Paternal Acceptance	23.64	7.04	25.69	6.44	9.83**
Paternal Rejection	6.45	4.62	5.45	3.96	9.07**
Paternal Control	8.47	3.83	9.06	3.78	0.11
Competition at School	8.17	4.64	7.91	4.82	0.46
Controlling Teachers	14.72	6.33	13.39	5.81	11.06**
Possibilities to Participate	14.11	4.47	16.14	4.04	23.85***
Performance Stress	8.75	3.61	8.09	3.87	2.24
Peer Acceptance	15.68	3.03	14.60	3.40	10.53**
Size of Social Network	20.97	6.71	21.31	6.00	0.00
Efficiency of Social Network	21.17	3.13	21.80	3.23	2.90

Group effect: Wilks Lambda=0.85; F=5.13; df=19/571; p<0.001
*p < .05 **p < .01 ***p < .001

Table 4: Comparisons of Psychosocial Correlates of Risk Group and Control Group at Time 3 in 2001

	Problematic Substance Use Group Total (N=290)		Control Group Total (N=303)		F
	Mean	SD	Mean	SD	(df = 1)
Number of Live Events	5.82	3.58	4.42	3.08	26.14***
Life Events Impact	-6.67	5.36	-5.27	4.53	14.04***
Active Coping	5.39	0.99	5.39	1.01	0.38
Avoidant Coping	2.74	1.07	2.60	1.12	1.98
Self-Esteem	26.03	5.33	26.40	5.25	1.36
Self-Awareness	18.94	5.03	18.81	4.93	1.16
Size of Social Network	21.53	6.70	22.65	7.26	2.01
Efficiency of Social Network	22.38	3.46	22.72	3.31	0.5

Group effect: Wilks Lambda=0.95; F=4.08; df=8/582; p<0.001
*p < .05 **p < .01 ***p < .001

5.5. Discussion

The present study compared PSU groups and control groups in the community rather than clearly defined clinical groups fulfilling criteria for manifest substance abuse. The emphasis on PSU was taken because these subjects should be potentially more apt and open for preventive measures. If there are cheap, reliable, and valid assessment tools for the identification of PSU subjects, identification in the community would be the first step in order to start interventions. These tools should not only be simple to administer but also allow composite definitions of substance use. Rather than focussing only on a single substance the present study is based on a composite definition of PSU reflecting the fact that most adolescent and young adult users consume various substances. Furthermore, the present longitudinal study allowed both for the repeated analysis of cross-sectional correlates and the predictive power of these variables on substance use at risk.

Starting from the identification of PSU by a combination of items asking for the frequency of alcohol, tobacco, and cannabis use, a steadily increasing number of subjects across the time span from early adolescence to young adulthood was identified in the present study. A more than nine-fold increase of PSU was observed in this period with a slight majority of females in a rather small risk group in early adolescence and a male predominance in males at later times. The increasing number and significant continuity of PSU is very much in line with what can be expected from recent reviews of international trends in use of a range of substances [13,20].

In the next step of the analyses it was shown that PSU at each point in time of development was significantly associated with a number of behavioural and other psychosocial features. These correlates were not only important by themselves but also served as a validation of the definition of PSU. There was a clear association with externalizing problems across all three times which is also very much in accordance with other studies on developmental patterns of substance use and abuse [1,5,7-9,13,18-20]. However, at time 2 in late adolescence PSU subjects also showed higher scores for internalizing problems. This finding matches other studies that found mood and anxiety disorders to be frequently associated with substance use disorders in adolescents [20].

Among the various psychosocial correlates the most consistent finding of PSU was the persistent association with life events from early adolescence to young adulthood which is in line with the finding that negative life events contribute to escalated substance use during adolescence [6]. Also in line with other studies [6,17] is the consistent finding that low parental support in terms of lower perceived parental acceptance and higher rejection at both times during adolescence is a marker of PSU. Avoidant coping as an additional correlate of substance use at risk was identified only at time 2 in late adolescence, which has been observed in terms of non-adaptive coping as another association with escalating substance use in adolescence [6]. Finally, among the various correlates of perceived school environment during adolescence, PSU was most consistently characterized across two times by the more controlling behaviour of the teacher, and in late adolescence also by the lack of possibility to participate and a higher amount of perceived peer acceptance.

The joint consideration of the correlated variables in logistic regression analyses allowed a more definite evaluation of the most relevant associations with PSU. At times 1 and 2 during adolescence, age was strongly contributing to the prediction of risk status indicating that there is a developmental pattern with increasing age contributing to PSU. The second strongest and most persistent variable across all three times contributing to PSU are externalizing problems. At younger age in early adolescence, negative perceived parenting contributes significantly to PSU whereas with greater autonomy in late adolescence these associations are replaced by deficits in active problem solving as indicated by avoidant coping, a feeling of having a lack of possibilities to participate at school, and peer influences as reflected by high peer acceptance. Later in young adulthood, none of the psychosocial variables besides externalizing problems (and the reverse, i.e. low scores on the internalizing dimension) had any predictive power. However, it should be taken into account that there were less potential correlates assessed at this time compared to the two previous times in the study.

The longitudinal analyses showed that at each time during adolescence it is predominantly the preceding PSU status that predicts PSU at outcome in young adulthood. Thus, the self-perpetuating character and the high rate of persisting PSU

were underlined again by the data in this study. Furthermore, age was a predictor only at time 1 and 2. Together with the increased age of the PSU groups at these times, this finding points to the rather trivial fact that PSU is age-dependent during adolescence. Other major and persistent risk factors were externalizing problems and male gender. Despite the trend for a closing gender gap with increasing age in a previous cross-sectional analysis of substance use in an even larger sample [16], the present approach with a focus on specifically defined subjects emphasizes the particular risk of males for remaining PSU subjects across time. Among the other psychosocial variables only a few contributed to the prediction and included some variables that were assessed in early adolescence, namely, low scores on the internalizing dimension which is just the correlate of the externalizing problems, heightened self-awareness, and a feeling of lacking possibilities to participate at school. In late adolescence, only perceived paternal acceptance contributed to the prediction which may be due to the fact that the father was seen as a role model particularly for the males in the PSU group.

In conclusion, the present study points to a rather persistent pattern of problematic substance use with a number of associated and predictive psychosocial features that both can be assessed in the community as a first step for the identification of individuals who are in danger of developing long-term risk behaviours in adulthood. The strength of the present study lies in the large community sample and the longitudinal approach. Limitations include the emphasis on PSU, rather than, substance use disorders according to the major schemes of diagnostic classification, and the reliance on self-reports of the subjects. However, it should be kept in mind that at this age in adolescence and early adulthood parents and caretakers are less reliable informants as to substance use in youths.

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5.7. Corrigendum

Re: Steinhausen, H.-C., Eschmann, S., & Winkler Metzke, C. (2007). Continuity, psychosocial correlates, and outcome of problematic substance use from adolescence to young adulthood in a community sample. *Child Adolesc Psychiatry Ment Health, 1*(1), 12.

There were some errors in the results section (5.4.). In the published version we stated:
At time 1, boys were less frequent than girls in the PSU group (13/30 vs. 17/30) and the controls (271/563 vs. 292/563) (McNemar $p < .001$) whereas males were more frequent among the adolescents at time 2 in the PSU group (79/155 vs. 76/155) and less frequent in the control group (205/437 vs. 233/437) (McNemar $p < .001$). At time 3 there were no significant gender effects.

The correct text should read as follows:
At time 1 and 2, there were no significant gender effects in the PSU groups (t1: 13/30 vs. 17/30; t2: 79/155 vs. 76/155; $Chi^2 = 0.26$, $df = 1$, $p = 0.61$) and among the controls (t1: 271/563 vs. 292/563; t2: 205/438 vs. 233/438; $Chi^2 = 0.80$, $df = 1$, $p = 0.37$). In contrast, at time 3 there were more males than females in the PSU group (160/290 vs. 130/290) and less males than females in the control group (124/303 vs. 179/303) ($Chi^2 = 12.05$, $df = 1$, $p < 0.001$).

6. Teilprojekt 3: Manuskript 5: A Developmental Trajectory Model of Problematic Substance Use and Psychosocial Correlates from Late Adolescence to Young Adulthood[5]

6.1. Abstract

Background: The developmental trajectory of problematic substance use (PSU) with associated risk and compensatory factors in adolescence has not been studied intensively. *Method:* PSU over seven years between adolescence and adulthood was studied. The data of 593 adolescents (mean age at first measurement occasion: 13.6 years, SD = 1.6; 284 males, 309 females) come from the Zurich Psychology and Psychopathology Study (ZAPPS), covering three measurement occasions over seven years. A probit linear effects model of longitudinal change including various psychosocial predictor variables was used to study the probability of becoming a problematic substance-user. *Results:* The PSU trajectory was nonlinear, rose rapidly through adolescence and flattened out through young adulthood. Age and year of assessment showed the strongest predictive power as risk factors. Among further risk and compensatory predictors, externalising problem behaviour at time one showed a strong increase in PSU. *Conclusions:* The present study provides new insight into the development of PSU from adolescence to young adulthood including risk and compensatory factors. Age-specific prevention programs should focus on externalising behaviour problems and avoidant coping.

Abbreviations

SU: Substance use; PSU: Problematic substance use; SA: Substance abuse; SD: Substance dependence; SUD: Substance use disorders; SAS: Software for statistical analyses; BIC: Bayesian information criteria; SPSS: Statistical Package for the Social Sciences; ZESCAP: Zurich Epidemiological Study of Child and Adolescent Psychopathology, ZAPPS: Zurich Adolescent Psychology and Psychopathology Study; SUQ: Substance Use Questionnaire; YSR: Youth Self-Report; YASR: Young Adult Self-Report; LES: Life Event Scale; PPB: Perceived Parental Behaviour.

[5] Eschmann, S., Zimprich, D., Winkler Metzke, C., & Steinhausen, H.-C. (submitted). A developmental trajectory model of problematic substance use and psychosocial correlates from late adolescence to young adulthood.

6.2. Introduction

The increase of substance use (SU) during adolescence is a major problem in many societies. The most frequently used drugs in this developmental period include alcohol, tobacco, and cannabis and the pattern of use of these substances has been reported to be very similar in various studies (Haegerich & Tolan, 2008; Palmer et al., 2009; Steinhausen et al., 2008; Steinhausen et al., 2007). In comparison to these substances the onset of the so-called illegal drugs starts later (Duncan, Tildesley, Duncan, & Hops, 1995; Wittchen et al., 2008). There is only a rather small time window in adolescence for the prevention of harmful SU of tobacco, and cannabis. Thus, more predictive information of adolescent SU is needed to enforce specific prevention (Wittchen et al., 2008). Community-based studies of risk and protective factors are essential in developing risk and protective factor-based assessment instruments to prevent adolescent substance abuse (SA) (Corrigan, Loneck, Videka, & Brown, 2007).

SU increases with age as part of the developmental changes in adolescence and often includes a stage of trial and error consumption of alcohol, tobacco and cannabis (Schulte, Ramo, & Brown, 2009; Wittchen et al., 2008) so that it is quite normative in this age range. However, this pattern of SU may lead to problematic substance use (PSU), SA, substance dependence (SD), or substance use disorders (SUD), which may persist into adulthood (Armstrong & Costello, 2002; Couwenbergh et al., 2006; Esser, Wyschkon, Schmidt, Blanz, & Ihle, 2008; Mayberry & Espelage, 2009; Palmer et al., 2009; Schulte et al., 2009; Steinhausen et al., 2007; Wittchen et al., 2008). A recent study from Germany (Wittchen et al., 2008) reported substantial numbers of transitions from SU and SUD in the first three years after SU onset, with ages ten to sixteen as high risk periods for the first legal SU of alcohol and nicotine.

Within the developmental perspective of adolescent SU, various factors contributing to SU have been studied and summarized in major reviews. These factors include life stress, personality features (e.g. sexual orientation, delinquency, and suicidal behaviour), family environment factors (e.g. parental behaviour and monitoring, a sibling affected by SU, and genetic factors), peer influences (e.g. peer SU and deviant peer affiliation), school features, and other environmental characteristics (Armstrong & Costello, 2002; Couwenbergh et al., 2006; Denton & Kampfe, 1994;

Esposito-Smythers & Spirito, 2004; Esser & Ihle, 2008; Fortenberry, 1995; Hopfer, Crowley, & Hewitt, 2003; Marshal et al., 2008; Nolen-Hoeksema, 2004; Vakalahi, 2001; Weinberg & Glantz, 1999; Weinberg, Rahdert, Colliver, & Glantz, 1998). Furthermore, inconsistent gender differences in adolescent SU have been reported in a small number of studies (Nolen-Hoeksema, 2004; Palmer et al., 2009; Steinhausen et al., 2008; Steinhausen et al., 2007; Wittchen et al., 2008) indicating that males show a higher amount of alcohol consumption, are more frequently looking for drunkenness and feeling high, and experience more negative consequences of alcohol use (Steinhausen et al., 2008). A recent review on adolescent alcohol use (Schulte et al., 2009) pointed out that despite of similar patterns of experimentations in the two genders differences between boys and girls result in a greater risk for male disruptive drinking in adulthood, based on the lower response to alcohol, greater estimates of perceived peer alcohol use, and socialization into traditional gender roles in males (Schulte et al., 2009). Furthermore, males are more frequently diagnosed with alcohol SU disorders but that there are no gender differences in the rates of tobacco dependence and marijuana SU disorders (Nolen-Hoeksema, 2004; Palmer et al., 2009; Schulte et al., 2009). These gender effects are stronger in younger adolescents and fade out with increasing age.

The motives for SU may be diverse but in many cases adolescent substance use may be understood as an avoidant coping-style or even a kind of self-medication of psychiatric symptoms (Bizzarri et al., 2009; Brodbeck, Matter, Page, & Moggi, 2007; Couwenbergh et al., 2006; Jaffee & D'Zurilla, 2009). There is a high rate of psychiatric comorbidity in adolescent SU, SA, SD, or SUD (Armstrong & Costello, 2002; Bizzarri et al., 2009; Buckner, Keough, & Schmidt, 2007; Buckner et al., 2008; Couwenbergh et al., 2006; Esser & Ihle, 2008; Esser et al., 2008; Gau et al., 2007; King, Iacono, & McGue, 2004; Steinhausen et al., 2007; Weinberg & Glantz, 1999; Weinberg et al., 1998). In some studies at least 60 per cent of the adolescents with SU, SA, or SD showed some comorbidity resulting in dual diagnoses (Armstrong & Costello, 2002; Couwenbergh et al., 2006). These comorbid diagnoses include externalising disorders, e.g. conduct disorders, oppositional defiant disorders, and ADHD (Armstrong & Costello, 2002; Couwenbergh et al., 2006; Esser & Ihle, 2008; Gau et al., 2007; King et al., 2004; Weinberg & Glantz, 1999; Weinberg et al., 1998), internalising and affective disorders, e.g. depression, anxiety disorders, and bipolar

disorders (Armstrong & Costello, 2002; Buckner et al., 2007; Buckner et al., 2008; Couwenbergh et al., 2006; Grant et al., 2004; King et al., 2004; Weinberg & Glantz, 1999), and psychotic disorders (Bizzarri et al., 2009).

In addition to co-existing psychopathology, a large number of psychosocial correlates and predictors of PSU have been studied and reviewed. These correlates may be regarded as moderating factors in terms of risk and compensatory factors or vulnerability and protective factors with risk and compensatory factors having a direct effect whereas vulnerability and protective factors operating only under exposure to stressors (Luthar, 1991; Rutter & Sroufe, 2000; Steinhausen, 2006; Steinhausen & Winkler Metzke, 2001). However, this distinction has not always been considered clearly in the research on correlates or predictors of adolescent SU. Negative moderating factors like risk or vulnerability factors in the development of adolescent SU include life events, biological factors like later maturation of brain structures and executive functions in males, genetic characteristics, individual features (e.g., avoidant coping, psychosocial stress, elevated suicidal behaviour, school failure, first sexual intercourse before the age of fifteen, and early onset of SU), peer characteristics (e.g., peer encouragement, sibling or peer SU, deviant peer affiliation and delinquency), family functioning variables (e.g., early maternal hostility, lack of family cohesion, and low parental connectedness), and environmental risk factors (e.g., low level for availability of illegal drugs in the neighbourhood) (Behrendt, Wittchen, Hofler, Lieb, & Beesdo, 2009; Blomeyer, Schmidt, & Laucht, 2008; Brodbeck, Matter, & Moggi, 2005; Brodbeck et al., 2007; Buckner et al., 2007; Cleveland, Feinberg, Bontempo, & Greenberg, 2008; Delucchi, Matzger, & Weisner, 2008; Denton & Kampfe, 1994; Duncan et al., 1995; Esposito-Smythers & Spirito, 2004; Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Gau et al., 2007; Ihle, Lehmann, & Esser, 2008; Marklein, Negriff, & Dorn, 2009; Mason, Hitch, & Spoth, 2009; Palmer et al., 2009; Schmid & Laucht, 2008; Schulte et al., 2009; Siebenbruner, Englund, Egeland, & Hudson, 2006; Steinhausen et al., 2007; Steinhausen & Winkler Metzke, 1998a; Vakalahi, 2001; Weinberg et al., 1998; Zufferey et al., 2007).

In contrast, there are also various positive moderating factors, i.e., compensatory and protective factors, including individual features (e.g., positive orientation towards the

future, objection to SU, belief that SU is wrong and belief in the ability to resist substances, higher intelligence and problem-solving ability, positive self-esteem, early detection and effective treatment of mental health problems, participation in a lot of sports, and alcohol sensitivity for female adolescents), peer characteristics (e.g., strong bond to prosocial peers), school factors (e.g., positive school climate, and positive sense of community), and family functioning indicators (e.g., positive family climate, strong bond to family, supportive family relationships and parental monitoring, living in a household with two parents) (Blomeyer et al., 2008; Buckner et al., 2007; Cleveland et al., 2008; Esser et al., 2008; Gau et al., 2007; Haegerich & Tolan, 2008; Ihle et al., 2008; Mayberry & Espelage, 2009; Schulte et al., 2009; Siebenbruner et al., 2006; Vakalahi, 2001; Weinberg et al., 1998). On the whole, more risk factors than protective factors have been studied and reported in the literature, and risk factors were stronger predictors of SU outcomes than protective factors (Cleveland et al., 2008). Cleveland and colleagues (2008) concluded also that family and community factors were more salient among younger adolescents, whereas peer and school factors were stronger among older adolescents.

So far, most of the studies on predictors of adolescent PSU have been based on cross-sectional correlative designs so that there is limited knowledge on longitudinal developmental trajectories of PSU including psychosocial correlates. Gau and colleagues (2007) used survival analysis to identify psychosocial and psychiatric predictors of SUD (including SA and SD) in early adolescence (age twelve to fourteen years) and found male gender, ADHD, conduct disorder, and sibling use of tobacco as the most predictive factors. Protective factors against SUD included living in a household with two parents, a good academic grade at grade 7, and objection to SU. This study was based on quite young individuals, and focused on SUD rather than PSU. In another study, SA and externalizing disorders at age eighteen were the strongest predictors of SA in early adulthood at age 25 and further strong predictors included obesity at age eight, thirteen, and eighteen, adverse familial conditions until age thirteen, and chronic stresses and strains at age eighteen (Esser et al., 2008).

Given the limited number of longitudinal studies on the trajectory of PSU, the present study examined the development of PSU from adolescence to young adulthood using a common probability model. Besides PSU, the following psychosocial predictors

were considered in the model: age, gender, year of assessment period, externalizing and internalizing problem behaviour, life events, perceived parental behaviour, avoidant coping, and perceived school environment.

6.3. Methods

6.3.1. Subjects

The sample was originally based on a cohort of pupils aged six to 17 living in the canton of Zurich, Switzerland in 1994. The cohort was a stratified randomised sample representing the 12 counties of the canton, school grades, and types of schools. It also formed the basis of the Zurich Epidemiological Study of Child and Adolescent Psychopathology (ZESCAP). A full description of the sampling procedure was given in a previous article (Steinhausen & Winkler Metzke, 2001). The preadolescents and adolescents (aged 11–17 years) of the ZESCAP sample (N = 1110) provided the basic cohort for the longitudinal Zurich Adolescent Psychology and Psychopathology Study (ZAPPS).

This cohort of 1110 subjects was studied longitudinally, and multidimensional screenings based on various questionnaires were performed on three occasions, namely in 1994, 1997, and 2001. Subsequently, structured psychiatric interviews were conducted with those subjects who scored above the cut-off score as well as with a certain number of controls scoring below the cut-off score on each screening instrument. Due to the screening procedure, the sample reduced each time. In addition, subjects dropped out of the sample (e.g., after leaving school) during both the screening and interview phases. A larger proportion of subjects and, particularly, more males than females withdrew at the interview stage compared with the screening stage. To work with a full data set, including all questionnaires and interviews based on a sample which was still representative for local census data, the final longitudinal cohort comprised 593 subjects with three waves of assessment. Mean ages of this longitudinal cohort at the three times of assessment were 13.6 (SD = 1.6), 16.6 (SD = 1.6), and 20.2 (SD = 1.7) years. The sample consisted of 284 (47.9 percent) males and 309 (52.1 per cent) females. These 593 subjects were representative of the census population with regard to gender ($Chi^2 = 2.14$, df = 1, p = n.s.) and biannual age distribution of 17–22 year olds ($Chi^2=2.67$, df = 2, p = n.s.).

The database of this sample has been used for various previous papers (Eschmann, Zimprich, Winkler Metzke, & Steinhausen, submitted; Steinhausen, Bösiger et al., 2006; Steinhausen et al., 2008; Steinhausen et al., 2007; Steinhausen et al., 2005; Steinhausen, Haslimeier et al., 2006; Steinhausen & Winkler Metzke, 2004, 2007). The present study is based on the data collected on these three occasions (N = 593) and deals with slightly reduced complete data sets containing the relevant predictors for the present analyses (final binary probit effects model: N = 519).

In a previous study, we defined PSU in adolescence and found that the size of the groups with PSU increased significantly by more than three times from adolescence to young adulthood (Steinhausen et al., 2007). The definition of PSU is also provided in the measures section. The same sample was used for this study. Sample characteristics are shown in Table 1. At time 1 and 2, there were no significant gender effects in the PSU groups and the controls (Chi^2 = 0.80, df = 1, p = n.s.). Whereas at time 3, boys were more frequent than girls in the PSU group and less frequent in the control group (Chi^2 = 12.05, df = 1, p < 0.001). Furthermore, the subjects of the PSU groups were significantly older at times one (mean = 15.1, SD = 1.0 vs. mean = 13.5, SD = 1.6, t = -7.99, df = 36.9, p < 0.001) and two (mean = 17.0, SD = 1.5 vs. mean = 16.4, SD = 1.6, t = -4.32, df = 299.0, p < 0.001). There were no significant age differences between the groups at time three.

6.3.2. Measures

The ZAPPS is based on a theoretical model and studies the conditions and processes which are essential to the mental health of growing young people as well as the development of mental problems and disorders. A broadband questionnaire was chosen to obtain information on relevant behavioural and emotional problems of adolescents. To analyse potential risk, compensatory, vulnerability, and protective factors of psychopathology (Steinhausen & Winkler Metzke, 2001), life events were hypothetically seen as stressors, while various psychosocial variables including coping, self-related cognitions, and peer acceptance were regarded as moderating factors with regard to behavioural and emotional problems.

Questionnaires were filled out confidentially by the subjects during school hours in 1994; those completed in 1997 and 2001 were returned by mail. All questionnaires

reflected raw scores and were positively keyed; high scores represent a high expression of the content of the scale. All scales showed good to excellent reliability. This study used a reduced number of assessment modules from the ZAPPS.

Table 1: Group sizes of problematic substance use over the three periods of measurement (N=593).

	Problematic substance use at time 1	
	Gender	
	Males (N = 284)	Females (N = 309)
Unproblematic SU	271	292
(N = 563; 94.9%)	(95.4%)	(94.5%)
Problematic SU	13	17
(N = 30; 5.1%)	(4.6%)	(5.5%)
	Problematic substance use at time 2	
	Gender	
	Males (N = 284)	Females (N = 309)
Unproblematic SU	205	233
(N = 438; 73.9%)	(72.2%)	(75.4%)
Problematic SU	79	76
(N = 155; 26.1%)	(27.8%)	(24.6%)
	Problematic substance use at time 3	
	Gender	
	Males (N = 284)	Females (N = 309)
Unproblematic SU	124	179
(N = 303; 51.1%)	(43.7%)	(57.9%)
Problematic SU	160	130
(N = 290; 48.9%)	(56.3%)	(42.1%)

Substance Use Questionnaire (SUQ)

The questionnaire was designed by Müller and Abbet (1991) in collaboration with the World Health Organization for a nationwide Swiss survey. It covers 22 items that deal with the consumption of legal drugs and illegal drugs. Five items cover nicotine use by both the respondents and their parents. A further eight items deal with alcohol use by the respondent. The response format varied for the different items. The introductory question for nicotine use inquired whether or not the respondent had ever smoked at least one cigarette. For frequency of current nicotine use the scale

ranged from "does not apply = 0" to "daily = 3". Alcohol use was assessed via a general introductory question (0 = no consumption, 1 = only a sip, 2 = an entire glass or more) and a detailed list of various alcoholic beverages with a response format ranging from 0 (no consumption) to 5 (daily consumption). Various subgroups were identified and a typology of adolescent alcohol use was validated (Steinhausen & Winkler Metzke, 2003).

Two types are relevant for this study. Heavy drinkers were defined by two positive responses to the following items: I drink until I feel high/until I get drunk. Problem drinkers had to respond positively to the following two items: I drink when I feel lonely/when I feel bad and having a problem. Based on frequency of tobacco, alcohol, and cannabis consumption, groups with PSU were defined at each of the three measurement points in time. In accordance with various studies, weekly or daily consumption of tobacco and/or alcohol, problem and heavy drinking aimed at drunkenness, and cannabis use more frequently than three times in the past month was considered to reflect PSU (Steinhausen et al., 2007; Steinhausen & Winkler Metzke, 2003).

Youth Self-Report (YSR)

The problem behaviour section of the YSR (Achenbach, 1991) and its Swiss adaptation (Steinhausen & Winkler Metzke, 1998b) consists of the following primary subscales: socially withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, and aggressive behaviour. In addition, two second-order scales reflecting externalising and internalising problems can be calculated. Only these two dimensions were considered in these analyses. Reliability of the scale measuring externalising and internalising problems was good to excellent in this sample with alpha coefficients ranging between 0.80 and 0.89.

Young Adult Self-Report (YASR)

With the exception of the subscale measuring social problems and the inclusion of the subscale measuring intrusiveness, the YASR (Achenbach, 1997) consists of the same primary and secondary dimensions as the YSR (Achenbach, 1991). The YASR was used during phase three. Reliability of the scale measuring externalising and

internalising problems was also good to excellent in this sample with alpha coefficients ranging between 0.80 and 0.89.

Life Event Scale (LES)

A total of 36 items were chosen from pre-existing questionnaires on life events. The time frame was defined as the twelve months prior to filling out the questionnaire. Beside frequencies of life events, a total impact score was calculated. This was based on a scale attached to each item ranging from –2 to +2 and indicating how unpleasant or pleasant the respective event was (Steinhausen & Winkler Metzke, 2001). Alpha coefficients of internal consistency ranged from 0.71 to 0.84.

Coping Capacities (CC)

Our modified version of the German Coping Across Situations Questionnaire (Seiffge-Krenke, 1989) addresses coping in four problem areas with school, parents, peers, and the opposite sex. Factor analysis resulted in two scales measuring active coping and avoidant behaviour. The CC was used at times one and two and the alpha coefficients of internal consistency for the two scales ranged from 0.56 to 0.70.

Perceived Parental Behaviour (PPB)

Based on pre-existing literature, for the ZAPPS an inventory that consisted of 32 items was developed (Reitzle, Winkler Metzke, & Steinhausen, 2001). Factor analysis resulted in three factors explaining 34 % of the variance for mothers and 35 % of the variance for the fathers. Alpha coefficients of internal consistency ranged between 0.70 and 0.83 for the two gender groups. The resulting three scales were identical for maternal and paternal behaviour and correlated highly (r = 0.71-0.79). Therefore, the scores for the two parents were summed. The three scales were labeled “acceptance” (e.g., “my mother/father praises me when I do something good”), “rejection” (e.g. “my mother/father easily becomes upset if I don’t do what she/he says”) and “control” (e.g. “my mother/father has clear rules for my behaviour”).

Perceived School Environment (PSE)

These scales were derived from a German project on development in adolescence (Fend & Prester, 1986) and consist of 32 items that deal with the perceived

psychosocial qualities of the school environment. Our own factorial analyses re-identified the five factors labelled "competition among students" (e.g. "in our class, each student tries to be more successful than the other"), "control by the teacher" (e.g. "many of our teachers treat us like small children"), "performance stress" (e.g. "we hardly manage our homework"), "possibility to participate " (e.g. "our teachers ask for our opinion before deciding"), and "peer acceptance" (e.g. "I consider myself to be one of the most accepted students in our class"). These scales were used only at times one and two. The resulting scales had alpha coefficients of between 0.65 and 0.79 at the two times of assessment.

6.3.3. Statistical Analyses

A developmental trajectory of PSU based on a mixed effects model for binary outcome data was analysed. All questionnaires scores represented raw scores. Data were analysed in the eighth version of the SAS System for Windows using of the NLMIXED procedure (SAS Institute Inc, 1999). A model fit by NLMIXED can be viewed as a generalisation of the random coefficients model fit by the MIXED procedure. This generalisation allows the random coefficients to enter the model nonlinearly, whereas in the MIXED procedure they enter linearly (SAS Institute Inc, 1999). The NLMIXED procedure implements maximum likelihood and enables analyses of data that are normal, binominal, or Poisson distributed or data that have any likelihood programmable with SAS statements (SAS Institute Inc, 1999). Since PSU is a binary variable (present vs. absent) a binary probit effects model of longitudinal change was imposed to capture the probability of becoming a problematic substance user (Hedeker & Gibbons, 1994; Long, 1997; Patefield, 2002; SAS Institute Inc, 1999). The model allows estimating of a latent variable PSU which is assumed to be related linearly to the observed variables by the structural model (Long, 1997). The model fit is expressed by the Bayesian information criteria (BIC) with a lower BIC showing a better model fit. The curve estimation option in the statistical software SPSS (version 14.0) was used for an additional graphical validation of the estimations of the latent variable PSU.

In this model of PSU, predictor variables for the probability of becoming a problematic substance user were analysed by their inclusion into the binary probit effects model. The order of the stepwise inclusion of potential predictors followed the

results of an earlier study based on the same longitudinal project (Steinhausen et al., 2007). Therefore, age, gender, year of assessment period, emotional and conduct problem behaviours, life events, perceived parental behaviour, avoidant coping, and perceived school environment were considered. The first predictors in the equation were age, gender, year of assessment period, and the interaction of the terms age and year of assessment period. In a second step, externalising and internalising problems were included. Before entering all remaining variables, the most powerful predictors of both the life events and the perceived parental behaviour variables were identified.

6.4. Results

As expected, it was possible to arrive at a mixed effects model for binary outcome data of substance use from adolescence to young adulthood (basic model with maximized value of the log likelihood (LL) (N = 593; -2 LL = 2021.5; BIC = 2040.6) including various predictor variables. The basic model with complete data for the relevant predictor variables (N = 519) of the final binary probit effects model showed even better values (N = 593; -2 LL = 1775.3; BIC = 1794.0). Predictor variables for the probability of becoming a problematic substance user were included stepwise into the model. The subsequent intermediate model included the following significant predictors: age (N = 593; -2 LL = 1612.8; BIC = 1638.3), gender (N = 593; -2 LL = 1606.8; BIC = 1638.7), year of assessment period (N = 593; -2 LL = 1584.7; BIC = 1623.1), and the interaction of age by year of assessment period (N = 593; -2 LL = 1523.0; BIC = 1567.7). Table 2 shows the parameters of these intermediate probit analyses of the latent variable PSU including all predictors. These findings indicate that female gender reduced the probability of PSU by a factor of 0.37 with all other variables constant. For every additional year of age or year of assessment period, the predicted probability of PSU increased by a factor of 0.44 (age) or 0.45 (year), with all other variables constant. The interaction of age and year changed significantly ($p < 0.001$) and reduced the predicted probability of PSU by a factor of 0.06 with all other variables constant.

Table 2: Intermediate probit analyses of the latent variable problematic substance use including age, gender, and time of assessment period as significant predictors.

	B	SD	T
Constant	-3.027	0.242	-12.50***
Age	0.444	0.070	6.37***
Gender	-0.366	0.157	-2.33**
Year of assessment period	0.452	0.063	7.14***
Age * year of assessment period	-0.064	0.009	-6.91***

Note: β is an unstandardised coefficient; SD: is the standard deviation of β; t is a t-test of β; alpha = 0.05. Intermediate maximized value of the -2 LL = 1523.0; model's BIC = 1567.7.
*p < 0.05, **p < 0.01, ***p < 0.001

In a second step, various additional variables were included stepwise into the intermediate binary probit effects model. These variables included externalising problem behaviour at time one (N = 566; -2 LL = 1358.4; BIC = 1409.1) and internalising problems at time one (N = 566; -2 LL = 1346.1; BIC = 1403.2). After including internalising problems at time one, gender was no longer a significant predictor (p = 0.109). Therefore, gender was excluded from further modelling. This procedure led to a new intermediate model without gender (N = 566; -2 LL = 1347.7; BIC = 1398.4). Before including the remaining variables, their predictive power was checked by separate analyses. Based on the smaller BIC, the impact of life events at time one (N = 558; -2 LL = 1323.4; BIC = 1380.3) was included whereas the number of life events at time one (N = 558; -2 LL = 1324.3; BIC = 1381.2) was discarded. Based on the same procedure, parental acceptance at time one (N = 554; -2 LL = 1311.9; BIC = 1375.1) was included into the model, whereas the other two variables parental control at time one (N = 554; -2 LL = 1313.2; BIC = 1376.3) and parental rejection at time one (N = 554; -2 LL = 1313.5; BIC = 1376.7) showed major BICs and were no significant predictors anymore (p = 0.060 and p = 0.075 respectively). Therefore, these two variables were discarded. Competition at school at time one (N = 552; -2 LL = 1305.5; BIC = 1374.9) was not significant (p = 0.088) and therefore, excluded from the model. In contrast, the other variables showed significant results and were included stepwise into the model, i. e., perceived control of teachers at time one (N = 552; -2 LL = 1288.7; BIC = 1358.2), peer acceptance at time two (N = 541; -2 LL = 1247.6; BIC = 1323.1), avoidant coping at time two (N = 515; -2 LL = 1193.2; BIC = 1274.4), and possibilities to participate in school at time two (N = 515; -2 LL = 1178.5; BIC = 1265.9). Because parental support at time one was no longer

significant (p = 0.067), it was excluded from the final model. Because there was a medium correlation (r = 0.33, p < 0.01) between externalizing problems at time one and perceived control of teachers at time one, the interaction between these two predictors was also checked for inclusion into the model. This interaction resulted in a higher BIC (N = 519; -2 LL = 1185.3; BIC = 1272.8) and was also not significant (p = 0.105).

Table 3: Final probit analyses of the latent variable substance use, including selected significant predictors.

	B	SD	T
Constant	-3.500	0.484	-7.23***
Age	0.461	0.072	6.37***
Year of assessment period	0.481	0.065	7.40***
Age * year of assessment period	-0.068	0.010	-6.69***
Ext. problem beh. at time 1	0.114	0.016	7.08***
Intern. problem beh. at time 1	-0.051	0.015	-3.46**
Impact of life events at time 1	-0.033	0.017	-1.94*
Controlling of teachers at time 1	0.368	0.110	3.34**
Peer acceptance at time 2	0.073	0.024	3.00**
Avoidant coping at time 2	0.135	0.051	2.64**
Possibilities to participate in school at time 2	-0.066	0.017	-3.82**

Note: β is an unstandardised coefficient; SD: is the standard deviation of β; t is a t-test of β; alpha = 0.05. Final maximized value of the -2 LL = 1187.8; model's BIC = 1269.1.
*p < 0.05, **p < 0.01, ***p < 0.001

The final binary probit effects model (N = 519; -2 LL = 1187.8; BIC = 1269.1) contained the following significant predictors, which predicted the estimated latent variable of becoming a problematic substance user: age, year of assessment period, interaction of age by year of assessment period, externalising behaviour problems at time one, internalising behaviour problems at time one, impact of life events at time one, control of the teachers at time one, peer acceptance at time two, avoidant coping at time two, and possibilities to participate at time two. The parameters of the final probit analyses of the latent PSU including all predictors are shown in Table 3.The final model also showed that for every additional year of age or year of assessment period the predicted probability of PSU increased by a factor of 0.46

(age) or 0.48 (year) with all other variables held constant. The interaction of age and year of assessment period changed significantly ($p < 0.001$) and reduced the predicted probability of PSU by a factor of 0.07, with all other variables held constant. The major increase of the predicted probability of PSU resulted from the perceived control by teachers at time one (factor 0.37), followed by externalising problems at time one (factor 0.11), avoidant coping at time two (factor 0.14), and peer acceptance at time two (factor 0.07), with all other variables held constant. In contrast, the predicted probability of PSU was reduced by factors of 0.07 by possibilities to participate at school at time two, internalising problem behaviour at time one, and impact of life events at time one with all other variables held constant.

After these calculations, it was possible to plot the PSU estimates for each person against the person's age during the assessment period in a longitudinal fashion. Figure 1 shows the longitudinal plots of the mixed effects model estimated values of the latent variable PSU by age based on connected results from the three periods of measurement. In this figure, the longitudinal trajectories are represented for each person, and the variables plotted by use of the mixed effects model offer an interpretation across seven years from adolescence to young adulthood. As one can see, the values of the latent variable PSU showed a rapid rise through adolescence and flattened out through young adulthood.

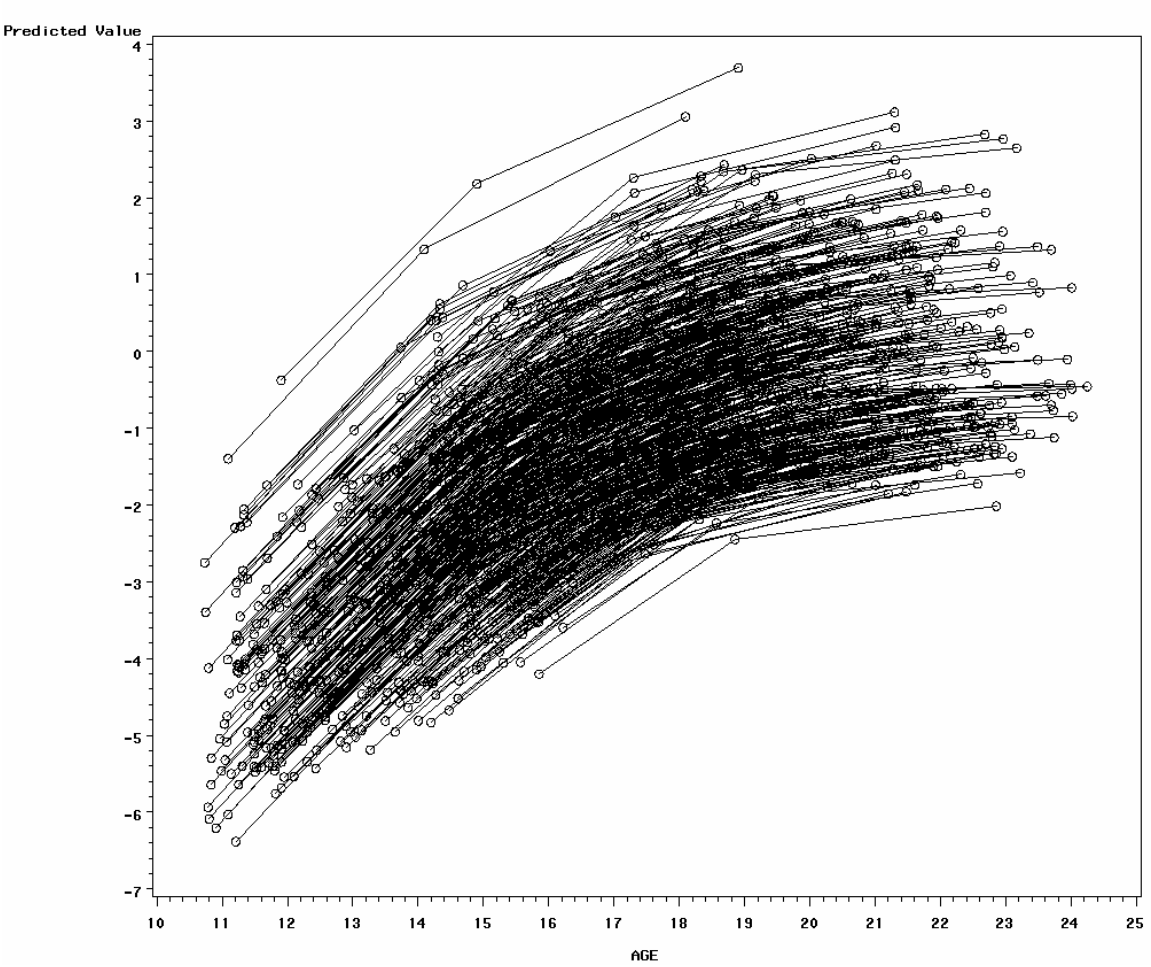

Fig. 1: Longitudinal plots of the mixed effects model estimated values of the latent variable problematic substance use by age based on connected results from the three periods of measurement.

The graphical validation of the estimation of the latent variable PSU showed the best visual and model fit for a quadratic (R Sq = 0.595) or a cubic (R Sq = 0.598) curve estimation. Therefore, Figure 2 displays the plots of the predicted values of the latent variable PSU by age, including a cubic regression line (R Sq = 0.598), with a confidence interval of 0.95.

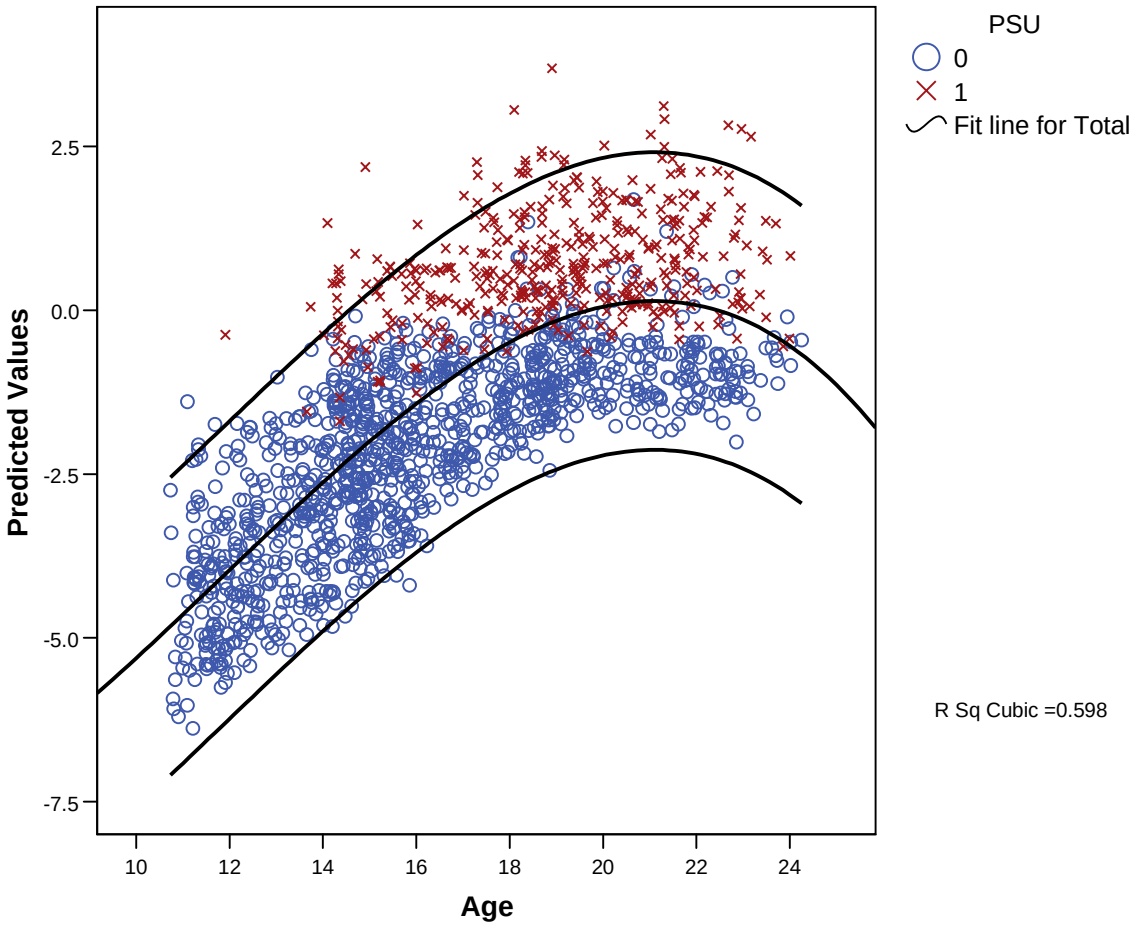

Fig. 2: Plots of predicted values of the latent variable PSU by age, including a cubic regression line (R Sq = 0.598) with a confidence interval of 0.95.

6.5. Discussion

The results show that across age the problematic substance use trajectory over seven years was nonlinear, rose rapidly through adolescence and flattened out through young adulthood. The final binary probit effects model of the latent variable PSU included the following ten significant predictors: age, year of assessment period, interaction of age and year of assessment period, externalising behaviour problems at time one, internalising behaviour problems at time one, impact of life events at time one, perceived control by teachers at time one, peer acceptance at time two, avoidant coping at time two, and possibilities to participate in school at time two. In general, these results are in accordance with other studies (Brodbeck et al., 2007; Cleveland et al., 2008; Denton & Kampfe, 1994; Duncan et al., 1995; Gau et al., 2007; Marklein et al., 2009; Mason et al., 2009; Mayberry & Espelage, 2009;

Vakalahi, 2001; Weinberg et al., 1998) and with an earlier study by our group (Steinhausen et al., 2007).

Among the various predictors age and year of assessment were the most important predictors. For every additional year of age or year of assessment period the predicted probability of PSU increased by a factor of 0.46 (age) or 0.48 (year), respectively, when all other variables were held constant. This finding is in accordance with other studies (Armstrong & Costello, 2002; Couwenbergh et al., 2006; Esser et al., 2008; Haegerich & Tolan, 2008; Jaffee & D'Zurilla, 2009; Palmer et al., 2009; Steinhausen et al., 2007). Interestingly, the interaction of age and year of assessment reduced the predicted probability of PSU by a factor of only 0.07 when all other variables were held constant. Therefore, this interaction showed only a small cohort effect. This might be explained by the significant age effect of the PSU groups at time one and two which has been reported previously (Steinhausen et al., 2007). Given the rapid increase in adolescent PSU, there is only a very small time-window for age-specific prevention of further progression into serious SA. Thus, it might be important to enforce age-specific prevention of PSU and already in early adolescence, as recommended by others (Wittchen et al., 2008).

Furthermore, gender was a significant predictor of PSU only in the intermediate modelling. After inclusion of the two significant predictors measuring externalising and internalising problem behaviour, gender no longer resulted as a significant predictor. Other studies have reported only few and inconsistent gender effects of SU/PSU (Nolen-Hoeksema, 2004; Palmer et al., 2009; Schulte et al., 2009; Steinhausen et al., 2008; Steinhausen et al., 2007; Wittchen et al., 2008), with stronger gender effects in younger adolescents. Obviously, in the present study externalising and internalising problem behaviours with their strong gender affiliation contained sufficient gender variance so that gender as an additional variable did not contribute to the prediction anymore. In addition, the impact of life events resulted as a significant positive predictor with only a small factor of 0.03. This finding is not in accordance with other studies demonstrating the negative effect of life-events on SU (e.g. Brodbeck et al., 2007) and needs further research to clarify whether it is the result of a specific sample or modelling effect. In contrast, the fact that avoidant coping at time two significantly contributed as a risk factor to an increase in PSU is in

accordance with theoretical expectations. For instance, avoidant coping could also play a role in terms of the self-medication hypotheses of treating mental problems including psychiatric symptoms by substance use (Bizzarri et al., 2009; Brodbeck et al., 2007; Couwenbergh et al., 2006; Jaffee & D'Zurilla, 2009). In a previous cross-sectional study which was partly based on the same cohort (Winkler Metzke & Steinhausen, 2002) avoidant coping also was correlated positively with externalizing and internalizing problem behaviours and perceived rejection by the parents. Thus, avoidant coping may be an important factor for the early identification of adolescents at risk of developing not only PSU but also other psychiatric symptoms (Esser et al., 2008; Wittchen et al., 2008).

In accordance with other studies (e.g. Cleveland et al., 2008; Steinhausen, 2006; Steinhausen et al., 2007), and general developmental trends in late adolescence, peer and school factors showed a stronger influence than family factors. The drop-out of the variable measuring perceived parental support at the end of the modelling in the present study could be explained by the increasing significance of more school- and peer-related factors, i.e., perceived control by teachers at time one, peer acceptance at time two, and possibilities to participate at school at time two. Interestingly, perceived control by teachers at time one emerged as a major predictive power besides peer acceptance as a risk factor at time two, and possibilities to participate at school at time two as a compensatory factor. The finding that peer acceptance is a risk factor for PSU is consistent with results from other studies (Gau et al., 2007; Marklein et al., 2009). On the other hand, the protective effect of possibilities to participate at school could be linked to the protective power of a positive school climate (Mayberry & Espelage, 2009). Finally, the fact that more risk factors than compensatory factors were identified and that risk factors were stronger predictors, are in accordance with results from other studies (e.g. Cleveland et al., 2008; Steinhausen, 2006; Steinhausen et al., 2007). However, further studies with a stronger focus on compensatory and protective factors may be needed.

Clearly, the modelling of PSU from adolescence to young adulthood is dependent on the operationalization of PSU. It is reasonable and necessary to use an operationalization of PSU that is specific to the developmental stage of adolescents and distinguishes PSU from diagnoses linked to adulthood like SA, SD, and SUD

(Armstrong & Costello, 2002; Couwenbergh et al., 2006; Esser et al., 2008; Haegerich & Tolan, 2008; Jaffee & D'Zurilla, 2009; Palmer et al., 2009; Steinhausen et al., 2007). Using data from a longitudinal field study, we focused on PSU rather than on SUD. In a previous study, we defined PSU in adolescence and retained the definition in the present study. Based on the frequency of tobacco, alcohol, and cannabis consumption, groups with PSU were defined at each of the three measurement points in time. In accordance with various studies, weekly or daily consumption of tobacco and/or alcohol, problem and heavy drinking aimed at drunkenness, and cannabis use more frequently than three times in the past month were considered to reflect PSU (Steinhausen et al., 2007; Steinhausen & Winkler Metzke, 2003).

Different approaches in the definition of PSU have been employed by other groups of researchers. Shrier, Harris, Kurland, and Knight (2003) in their cross-sectional study of adolescents in primary care used the Diagnostic and Statistical Manual for Primary Care (DSM-PC) Child and Adolescent Version (Wolraich, Felice, & Drotar, 1996) to identify substance use problems as a diagnostic category. This diagnostic category was reported to be along the same developmental spectrum of SUD but clearly is also distinct from SUD. In this definition, PSU was without significant impaired functioning, but there may have been negative consequences as a result from SU (e.g. injury, conflicts with family or peers), and the adolescent may have been at risk of serious outcomes (e.g. accident under influence of SU). The findings by Shrier and colleagues (2003) support the continuity approach of SU among adolescents in primary care and are consistent with findings of sub-clinical SU in other populations. Another definition of PSU was used in the community-based cross-sectional study on alcohol, tobacco, and illegal drugs by Ihle, Lehmann, and Esser (2008). In this study, problematic alcohol use was operationalized as several times actual weekly consumption, whereas problematic tobacco use was operationalized as daily smoking. Obviously, a softer definition of problematic use of illegal drugs was used, with one and more consumption in the preceding year. Based on these definitions, PSU was best predicted by a combination of risk factors (e.g. school failure, and a low level for availability of illegal drugs in the neighbourhood) and protective factors (e.g. participating a lot of sport, and a positive family climate) (Ihle et al., 2008). In

conclusion, despite these differences in operationalization of PSU the findings on predictors and outcomes of PSU are rather congruent.

The present study has both strengths and limitations. The strength of this study lies in its epidemiological field study character and the focus on a specific time period between adolescence and young adulthood as a psychologically important transition period and an initiation period for SU and SA. Some limitations of the present study have to be mentioned as well. The present findings may be sample-dependent and may be in need of further replication. Furthermore, all self-report measures particularly on SU may be biased by insufficient recall. One could also argue that the results are based on adolescent self-reports and are not corroborated by further information, e.g. parental reports. This issue could be studied by comparing adolescent and parent reports but it should be kept in mind that adolescent self-reports of SU/PSU are clearly more accurate than parental reports (Esposito-Smythers & Spirito, 2004). Finally, the limitations of the method should be considered. The predicted latent variable of PSU is based on a model that does not allow distinguishing between the correlational or causal role of any predictor.

In conclusion, the present study provided new insight into the developmental trajectory of PSU from adolescence to young adulthood including risk and compensatory factors of PSU over a time frame of seven years. Future studies may ascertain in a more detailed way the additional impact of school factors with a stronger focus on positive factors of impact including peer and sibling influences. Furthermore, the design of prevention and intervention programs might profit from concentrating particularly on adolescents showing externalising problem behaviour and avoidant coping. In addition, prevention and intervention programs for PSU should be installed in early adolescence based on assessments of risk and compensatory factors in the community as recommended by various groups of researchers (Corrigan et al., 2007; Wittchen et al., 2008).

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7. Allgemeine Diskussion

In der vorliegenden kumulativen Dissertation wurden entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden beleuchtet. Es handelt sich dabei um einen Beitrag zum besseren Verständnis der komplexen Entwicklung in der Adoleszenz. Im Rahmen einer allgemeinen Diskussion werden zu Beginn die wichtigsten Ziele und Vorgehensweisen der drei Teilprojekte erläutert (7.1.1.) sowie die wichtigsten Resultate vorgestellt und kommentiert (7.1.2.). Im Rahmen der drei verschiedenen Teilprojekte (siehe Kapitel 2 bis 5) wurden die Resultate bereits diskutiert. Diese drei Teilprojekte decken verschiedene Themengebiete der Entwicklungspsychopathologie ab und können somit nur begrenzt im Rahmen einer inhaltlichen Diskussion zueinander in Bezug gesetzt werden. In dieser abschliessenden allgemeinen Diskussion werden die verschiedenen Teilresultate soweit möglich zueinander in Verbindung gesetzt (7.2.). Abschliessend folgen kritische Anmerkungen zu den Studien (7.3.) sowie eine Konklusion (7.4.) der gesamten Arbeit.

7.1. Ziele, Vorgehensweisen und wichtigste Resultate

In diesem Unterkapitel werden nochmals kurz die wichtigsten Ziele der Teilprojekte mit den dazugehörigen Vorgehensweisen (7.1.1.) und die entsprechenden Resultate (7.1.2.) erläutert.

7.1.1. Ziele und Vorgehensweisen

Im ersten Teilprojekt (siehe Kapitel 2), dem epidemiologischen Teil der Arbeit, wurden im Rahmen einer systematischen Literaturübersichtsarbeit die Prävalenzen psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen (bis 25 Jahre) auf Basis internationaler epidemiologischer Studien des Zeitraumes 1987 bis 2004 analysiert. Dabei wurden unter entwicklungspsychopathologischen Gesichtspunkten speziell die Aspekte von Geschlecht und Alter sowie Punkt- und Lebenszeitprävalenzen erfasst (Eschmann, Weber Häner, & Steinhausen, 2007). Im Rahmen des empirischen Teils wurden zwei weitere Teilprojekte realisiert. Dabei wurden im zweiten Teilprojekt (siehe Kapitel 3) auf Basis vorhandener Daten einer empirischen Zürcher Längsschnittstudie Analysen von Entwicklungsverläufen über drei Messzeitpunkte vom Jugendalter bis ins frühe Erwachsenenalter durchgeführt. Ziel

der Analysen war die Unterscheidung von jugendlichen Risikogruppen aufgrund ihrer Entwicklungsverläufe internalisierender Probleme (Eschmann, Zimprich, Winkler Metzke, & Steinhausen, submitted-a). Aufgrund eines bekannten Zusammenhangs internalisierender Probleme mit Selbstwert (Galambos, Barker, & Krahn, 2006; Mann, Hosman, Schaalma, & de Vries, 2004; Orth, Robins, & Roberts, 2008; Steinhausen & Winkler Metzke, 2001) wurden entsprechend doppelte Entwicklungsverläufe internalisierender Probleme und des Selbstwerts analysiert. Aufgrund ausgewiesener Geschlechtsunterschiede bei internalisierenden Problemen (Bongers, Koot, van der Ende, & Verhulst, 2003; Dekker et al., 2007; Dekovic, Buist, & Reitz, 2004; Eschmann et al., 2007; Leve, Kim, & Pears, 2005; Verhulst et al., 2003; Zwaanswijk, Verhaak, Bensing, van der Ende, & Verhulst, 2003) wurden nach Geschlechtern getrennte Modellierungen der Entwicklungsverläufe der Jugendlichen durchgeführt. Abschliessend wurde im dritten Teilprojekt (siehe Kapitel 4 bis 6) auf Basis derselben Längsschnittstichprobe problematischer Substanzkonsum im Jugendalter genauer betrachtet. Hierfür wurden zuerst die Kontinuität, psychosoziale Korrelate sowie das Ergebnis von Alkoholkonsum (siehe Kapitel 4) und problematischem Substanzkonsum (siehe Kapitel 5) von der Adoleszenz bis ins junge Erwachsenenalter beleuchtet (Steinhausen, Eschmann, Heimgartner, & Winkler Metzke, 2008; Steinhausen, Eschmann, & Winkler Metzke, 2007). Auf der Basis der voran gegangenen Analysen wurde ein Modell des Entwicklungsverlaufs von problematischem Substanzkonsum und psychosozialen Korrelaten von der späteren Adoleszenz bis ins junge Erwachsenenalter modelliert (siehe Kapitel 6) (Eschmann, Zimprich, Winkler Metzke, & Steinhausen, submitted-b).

7.1.2. Wichtigste Resultate

In der Übersichtsarbeit zu Prävalenzen psychischer Störungen bei Kindern, Jugendlichen und jungen Erwachsenen (bis 25 Jahre) konnte gezeigt werden (siehe Kapitel 2), dass die mittlere Periodenprävalenz ohne Berücksichtigung der Funktionstüchtigkeit 22 Prozent beträgt und damit höher ist als bei früheren Übersichtsarbeiten berichtet. Unter der Berücksichtigung der Funktionstüchtigkeit beträgt die mittlere Periodenprävalenz 16 Prozent. Auch in neueren Studien zeigte sich ein unterschiedlicher Verlauf von verschiedenen psychischen Störungen für die beiden Geschlechter (Eschmann et al., 2007). Aufgrund dieser Ergebnisse wurde bei den anschliessenden Analysen auf die Möglichkeit von Geschlechtseffekten geachtet.

Wie in Kapitel drei dargestellt, resultierte bei internalisierenden Problemen für die weiblichen Jugendlichen ein Modell mit zwei Gruppen („low persisters“ and „adolescent peakers“), bei den männlichen Jugendlichen hingegen eines mit drei Gruppen („low persisters“, „fast decreasers“, and „fast increasers“). In Übereinstimmung mit zwei anderen Studien beinhaltete lediglich das Modell der männlichen Jugendlichen eine Gruppe mit abnehmenden Werten internalisierender Probleme im Verlauf der analysierten sieben Jahre (Dekker et al., 2007; Stoolmiller, Kim, & Capaldi, 2005). Vergleichend zu den Modellen internalisierender Probleme wurde auch die Skala Selbstwert von Rosenberg (1965) modelliert. Diese Modelle enthalten je drei Gruppen für die beiden Geschlechter („high persisters“, „increasers“ und „decreasers“). Bei beiden Geschlechtern zeigte sich ein sehr starker (weibliche Jugendliche) bis starker Zusammenhang (männliche Jugendliche) zwischen den Modellen internalisierender Probleme und Selbstwert. Entwicklungsverläufe internalisierender Probleme und Selbstwert sind in der Adoleszenz in Übereinstimmung mit bisherigen Forschungsergebnissen geschlechtsabhängig (Harter & Whitesell, 2003; Kling, Hyde, Showers, & Buswell, 1999; Mann et al., 2004; Orth et al., 2008; Sandmeier, 2005; Steinhausen & Winkler Metzke, 2001) und bestätigen bisherige Ergebnisse, dass Selbstwert ein moderierender Faktor für internalisierende Probleme (Mann et al., 2004; Steinhausen & Winkler Metzke, 2001) und depressive Symptome ist (Mann et al., 2004; Orth et al., 2008; Steinhausen & Winkler Metzke, 2001). Internalisierende Probleme können jedoch nicht vollständig durch den Selbstwert erklärt werden, deshalb ist die Untersuchung weiterer validierender Variablen von Interesse, wie beispielsweise die Qualität der Eltern-Adoleszenten- und Peer-Beziehungen, schulische Kompetenzen sowie belastende Lebensereignisse. Aufgrund eines besseren Verständnisses dieser Prozesse könnten betroffene Heranwachsende früher identifiziert und entsprechende präventive Möglichkeiten erarbeitet werden (Eschmann et al., submitted-a).

Wie in Kapitel vier aufgezeigt, beinhaltete bei der Analyse, dem Verlauf und Korrelaten von Alkoholkonsum von der Adoleszenz bis ins junge Erwachsenenalter ein Anstieg von Alkoholkonsum lediglich wenige geschlechtsspezifische Unterschiede bei der Menge des Alkoholkonsums und den Trinkmotiven. In der späteren Adoleszenz und im jungen Erwachsenenalter zeigten männliche Heranwachsende grösseren Alkoholkonsum und suchten häufiger die Trunkenheit sowie sich „high“ zu

fühlen. Männliche Heranwachsende erlebten zudem mehr negative Konsequenzen des Alkoholkonsums. Eine Untergruppe mit starkem oder problemorientiertem Alkoholkonsum zeigte höhere Werte bei emotionalen und Verhaltensproblemen sowie Anzeichen einer beeinträchtigten psychosozialen Funktionsfähigkeit, sowohl in der späteren Adoleszenz als auch im jungen Erwachsenenalter. Allgemein wurden soziale Anlässe am Häufigsten als Trinkmotiv genannt. Als weitere häufige Motive wurde die Absicht sich zu betrinken oder sich „high“ fühlen genannt. Wie im Rahmen dieser schweizerischen Studie in der Allgemeinbevölkerung in Übereinstimmung mit bisherigen Forschungsergebnissen in der Schweiz (Kuntsche, 2004; Narring et al., 2004; Schmid, Delgrande, Kuntsche, & Kuendig, 2003) gezeigt werden konnte, erweist sich Alkoholkonsum bei einem beträchtlichen Anteil Jugendlicher als problematisch und geht mit einer grossen Anzahl psychosozialer Probleme einher (Steinhausen et al., 2008).

Die Analyse von problematischem Substanzkonsum, dessen Kontinuität und psychosoziale Korrelate im Verlauf der untersuchten sieben Jahre zeigte ein kontinuierlicher Anstieg der Gruppengrösse der Jugendlichen und jungen Erwachsenen mit problematischem Substanzkonsum (siehe Kapitel 5). Dieses Ergebnis steht in Übereinstimmung mit internationaler Literatur (Weinberg & Glantz, 1999; Wittchen et al., 2008). Die querschnittlichen Korrelate von problematischem Substanzkonsum zu den drei Messzeitpunkten zeigten ein ähnliches Muster mit mehr externalisierenden Problemen, sowie mehr und grösserer Belastung durch Lebensereignisse. Bei den ersten beiden Messzeitpunkten erlebten Jugendliche mit problematischem Substanzkonsum weniger günstigen elterlichen Erziehungsstil und Merkmale der Schulumgebung, wie beispielsweise stärker kontrollierende Lehrpersonen. Weiter empfanden diese Jugendliche beim zweiten Messzeitpunkt auch geringere Mitbestimmungschancen in der Schule und fühlten sich aber besser akzeptiert von ihren Peers. Im Längsschnitt betrachtet liess sich aufzeigen, dass problematischer Substanzkonsum im jungen Erwachsenenalter am stärksten und stabilsten mit dem vorhergehenden Risikostatus, externalisierenden Verhaltensproblemen sowie dem männlichen Geschlecht zusammen hängt. Wie sich im Kapitel fünf zeigt, konnte somit ein relativ stabiles Muster der assoziierten und prädiktiven psychosozialen Faktoren in der Allgemeinbevölkerung identifiziert werden. Damit können betroffene Heranwachsende identifiziert werden, die im Erwachsenenalter

ein problematisches Risikoverhalten aufweisen könnten. Aufgrund der steigenden Häufigkeit und der ermittelten Korrelate zeigte sich problematischer Substanzkonsum als bedeutendes und weiter zu beachtendes Problem in der Adoleszenz und dem jungen Erwachsenenalter (Steinhausen et al., 2007).

Weiter zeigte sich im Rahmen der vorliegenden Dissertation beim modellierten Entwicklungsverlauf von problematischem Substanzkonsum und psychosozialen Korrelaten von der Adoleszenz bis ins junge Erwachsenenalter (siehe Kapitel 6) in Übereinstimmung mit anderen Studien ein nicht-linearer Verlauf von problematischem Substanzkonsum, der im Laufe der Adoleszenz schnell anstieg und im jungen Erwachsenenalter abflachte (Brodbeck, Matter, Page, & Moggi, 2007; Cleveland, Feinberg, Bontempo, & Greenberg, 2008; Denton & Kampfe, 1994; Duncan, Tildesley, Duncan, & Hops, 1995; Gau et al., 2007; Marklein, Negriff, & Dorn, 2009; Mason, Hitch, & Spoth, 2009; Mayberry & Espelage, 2009; Steinhausen et al., 2007; Vakalahi, 2001). Das Alter der befragten Jugendlichen sowie das Jahr der Messzeitpunkte erwiesen sich als stärkste Risikofaktoren für problematischen Substanzkonsum. Neben weiteren Risiko- und kompensatorischen Faktoren bewirkten externalisierende Verhaltensprobleme beim ersten Messzeitpunkt sowie problemmeidendes Verhalten beim zweiten Messzeitpunkt einen starken Anstieg von problematischem Substanzkonsum. Weitere Studien sollten auf schulbasierte Faktoren, beispielsweise wahrgenommene Kontrolle durch Lehrpersonen, Anerkennung durch Peers sowie Mitbestimmungschancen in der Schule, mit speziellem Fokus auf kompensatorische Faktoren achten. Altersspezifische Interventions- und Präventionsprogramme von problematischem Substanzkonsum könnten von einem Fokus auf externalisierende Verhaltensprobleme sowie problemmeidendes Verhalten profitieren und sollten für die frühe Adoleszenz konzipiert werden, basierend auf einer Erhebung von Risiko- und kompensatorischen Faktoren in der Gesellschaft, wie von anderen Autoren (Corrigan, Loneck, Videka, & Brown, 2007; Wittchen et al., 2008) empfohlen (Eschmann et al., submitted-b).

7.2. Diskussion der verschiedenen Studien

Im vorliegenden Unterkapitel werden die Resultate der Teilstudien soweit möglich miteinander verknüpft und bezüglich inhaltlichen (7.2.1.) sowie methodischen Aspekten (7.2.2.) betrachtet.

7.2.1. Inhaltliche Aspekte

Die vorliegenden Ergebnisse verweisen auf die Wichtigkeit adäquater Behandlung und Prävention psychischer Störungen sowie emotionaler und Verhaltensprobleme im Jugend- und jungen Erwachsenenalter. Mindestens jede siebte heranwachsende Person ist von psychischen Störungen mit Beeinträchtigung der Funktionstüchtigkeit betroffen. Dabei zeigten sich bei verschiedenen psychischen Störungen unterschiedliche Verläufe für weibliche und männliche Jugendliche. Subklinische internalisierende Probleme treten sogar bei rund 30 Prozent der Jugendlichen mit einem starken Zusammenhang zum Selbstwert auf. Dieser Zusammenhang sticht insbesondere bei weiblichen Jugendlichen als sehr stark hervor. Fast die Hälfte aller jungen Erwachsenen übt bis zum jungen Erwachsenenalter (bis 25 Jahre) problematischer Substanzkonsum aus. Dies ist oft von assoziierten externalisierenden Verhaltensproblemen und problemmeidendem Verhalten begleitet.

In Übereinstimmung mit anderen Autoren sind folglich eine frühzeitige Diagnostik, multimodale Behandlung und Prävention im Kindes- und Jugendalter erforderlich, um einer Chronifizierung eines maladaptiven Verhaltens und Entwicklungsverlaufs angemessen entgegenwirken zu können (Petermann, Koch, & Hampel, 2006). Das Zeitfenster in der Adoleszenz ist für eine wirksame spezifische Prävention von problembasiertem Tabak- und Cannabiskonsum klein. Deshalb ist es von Interesse, entsprechende empirische Risiko- und kompensatorische Faktoren zu beachten (Wittchen et al., 2008). Bei der Behandlung und Prävention klinischer Symptome und subklinischer Probleme im Jugend- sowie im jungen Erwachsenenalter sollte allgemein auf das Alter und das Geschlecht geachtet werden. Das heisst bei weiblichen Jugendlichen ist ein zusätzlicher Fokus auf internalisierende Probleme und einen tiefen Selbstwert empfohlen. In Zusammenhang mit problematischem Substanzkonsum ist hingegen unabhängig vom Geschlecht auf externalisierende Verhaltensprobleme und problemmeidendes Verhalten zu achten. Weiter gehen wir

einig mit anderen Autoren (Cleveland et al., 2008), dass mit zunehmendem Alter der Heranwachsenden die Berücksichtigung von schulbasierten Faktoren, wie wahrgenommene Kontrolle durch Lehrpersonen, Anerkennung durch Peers sowie Mitbestimmungschancen in der Schule wichtig sind.

Diese Faktoren sollten bei der Konzeption altersspezifischer Interventions- und Präventionsprogramme berücksichtig werden. In diesem Zusammenhang sind beispielsweise Projekte wie „Däts it“ der Stadt Bern (2009), in welchem 7. Klässler/innen als Multiplikatorinnen und Multiplikatoren ausgebildet werden, um ihre Klassen bezüglich Suchtrisiken und Suchtverhalten zu unterrichten von hohem Wert. Ebenso ist „alkTalk“ der Suchtpräventionsstelle Zürich in Kooperation mit dem Fussball Club Zürich (2009) als interaktives Präventionsprogramm für Oberstufenschulen zu Alkohol und Risiko mit Modellwirkung für Jugendliche von grossem Interesse. Dabei müssten allerdings abschliessende Evaluationen vorliegen, um den effektiven Wert dieser Projekte einschätzen zu können.

7.2.2. Methodische Aspekte

Im Rahmen entwicklungspsychopathologischer Forschung sind Literaturübersichtsarbeiten zur Gewinnung eines Überblicks über bestehende epidemiologische Forschungsresultate und Trends von Interesse. Solche Reviews ermöglichen eine gezielte Orientierung an aktuellen empirischen Resultaten für die Behandlung und Prävention psychischer Störungen und maladaptiver Entwicklungsverläufe Heranwachsenden.

Im Rahmen der Analyse von Entwicklungsverläufen besteht eine Debatte bezüglich Variablen- versus Personen-orientierten methodischen Verfahren (Hedeker & Gibbons, 1994; Jones & Nagin, 2007; Long, 1997; Nagin, 2005; Nagin & Tremblay, 2005; Patefield, 2002; von Eye & Bergman, 2003). Wie gezeigt werden konnte, ermöglicht die Modellierung von Entwicklungsverläufen mittels Personen-orientierten Verfahren detailliertere Informationen über Entwicklungsverläufe bei Heranwachsenden als gemittelte Verläufe. Beispielsweise ermöglicht der gruppenbasierte Ansatz von Nagin und Kollegen (Jones & Nagin, 2007; Jones, Nagin, & Roeder, 2001; Nagin, 1999, 2005; Nagin & Tremblay, 2005) die Modellierung verschiedener Verlaufsgruppen von internalisierenden Problemen und dem Selbstwert von

Jugendlichen und jungen Erwachsenen (Eschmann et al., submitted-a). Weiter konnte mittels gemischter Modelle für binäre Daten mit psychosozialen Korrelaten (Hedeker & Gibbons, 1994; Long, 1997; Patefield, 2002; SAS Institute Inc, 1999) der Verlauf problematischen Substanzkonsums vom Jugendalter bis ins junge Erwachsenenalter modelliert werden (Eschmann et al., submitted-b). Die Modellierung von Entwicklungsverläufen im Jugendalter erlaubt in Übereinstimmung mit anderen Autoren somit ein detaillierteres Bild entwicklungspathologischer Faktoren und Verläufe bei Heranwachsenden.

7.3. Kritische Anmerkungen zu den Studien

Bezüglich der vorliegenden Studien sind auch kritische Anmerkungen zu erwähnen. Die Resultate könnten von der Stichprobe abhängig sein und benötigen deshalb Replikationen. Weiter ist das Problem der Berücksichtigung verschiedener Informantenquellen bekannt, das heisst Selbstauskünfte von Kindern, Jugendlichen und jungen Erwachsenen sowie Fremdauskünfte durch Eltern und Lehrpersonen. Im Rahmen von epidemiologischen Studien zeigten verschiedene Studien, dass Prävalenzraten stark von den Einschätzungen und der Gewichtung verschiedener Informanten abhängen (Fombonne, 2002; Ihle & Esser, 2002; Petermann, 2005; Roberts, Attkisson, & Rosenblatt, 1998; Steinhausen & Winkler Metzke, 2003; Verhulst, van der Ende, Ferdinand, & Kasins, 1997). Bei epidemiologischen Studien führen Angaben von nur einer Informationsperson zu einem unvollständigen oder verzerrten Bild der betroffenen Patienten. Zudem unterscheiden sich mit steigendem Alter der Kinder und Jugendlichen die Angaben aus verschiedenen Informationsquellen immer mehr (van der Ende & Verhulst, 2005). Bezüglich internalisierenden Problemen bei Jugendlichen sind hingegen Selbstangaben im Vergleich zu Elternangaben präziser (Angold, 1988; Eschmann et al., 2007; Verhulst et al., 2003). Auch Angaben zu Substanzkonsum werden von Jugendlichen genauer berichtet als von ihren Eltern (Esposito-Smythers & Spirito, 2004). Aufgrund des oft grösser werdenden Bewegungsspielraums von Jugendlichen in der Adoleszenz sind diese Unterschiede nachvollziehbar. Bei weiteren Studien sollten deshalb die Informantenproblematik, das Geschlecht sowie das Alter der Probanden beachtet werden.

Wie von anderen Autoren beschrieben, gestaltet sich die Interpretation von Ergebnissen modellierter Entwicklungsverläufe, das heisst von daraus resultierenden

Modellen teilweise schwierig (Long, 1997; Nagin, 1999, 2005; Nagin & Tremblay, 2005; von Eye & Bergman, 2003). Die resultierenden Modelle von Entwicklungsverläufen basieren auf Methoden, die im Idealfall eine bestmögliche Approximation an die Realität darstellen. Damit eine solche Approximation möglichst gut der Realität entspricht, sollten bei der Modellierung von Längsschnittdaten bestehende methodische Richtlinien und Empfehlungen beachtet werden, wie beispielsweise die Beurteilung verschiedener Modelle anhand des Bayes'schen Informationskriteriums (Bayesian Information Criterion, BIC), bei welchem ein grösserer BIC für eine bessere absolute Modellpassung spricht. Weiter sollten modellierte Ergebnisse kritisch im Kontext der bestehenden Literatur betrachtet und falls möglich allenfalls mit anderen Methoden validiert werden. In den vorliegenden Projekten wurde beispielsweise der Zusammenhang der Entwicklungsverläufe internalisierender Probleme mit dem Selbstwert mittels der Berechnung des Zusammenhangsmass Cramer's V bestätigt. Weiter wurde für den geschätzten Entwicklungsverlauf problematischen Substanzkonsums vom Jugendalter bis ins junge Erwachsenenalter mittels der Option Kurvenschätzung im Statistikprogramm SPSS (Version 14.0) eine zusätzliche graphische Validierung aufgezeigt.

7.4. Konklusion

Zusammenfassend ermöglichte die vorliegende Dissertation einen Einblick in entwicklungspsychopathologische Faktoren und Verläufe bei Heranwachsenden. In weiteren Studien, bei der Behandlung von Jugendlichen sowie der Erstellung und Durchführung von Präventionsprogrammen sollten nachfolgende Risiko- und kompensatorische Faktoren beachtet werden. Das Alter und das Geschlecht der entsprechenden Heranwachsenden sind in der Adoleszenz von zentraler Bedeutung. Weiter sind internalisierende und externalisierende Verhaltensauffälligkeiten, der Selbstwert, problemmeidendes Verhalten, der Umgang mit Lebensereignissen sowie schulbasierte Faktoren mit speziellem Fokus auf kompensatorische Faktoren von jugendlichen Peerbeziehungen von Interesse. Bei weiblichen Jugendlichen ist eine stärkere Fokussierung auf die Behandlung und Prävention internalisierender Probleme und tiefem Selbstwert empfohlen. Bei problematischem Substanzkonsum, von welchem fast die Hälfte aller jungen Erwachsenen betroffen ist, sollte hingegen unabhängig vom Geschlecht auf externalisierende Verhaltensprobleme und problemmeidendes Verhalten geachtet werden. Bei der Planung von Interventions- und

Präventionsprogrammen ist in der Kindheit und frühen Adoleszenz ein Fokus auf elterliches Erziehungsverhalten empfehlenswert, bei älteren Heranwachsenden sollten jedoch schulbezogene Faktoren wie wahrgenommene Kontrolle durch Lehrpersonen, Mitbestimmungschancen in der Schule und Peerbeziehungen stärker im Zentrum stehen. Für die Prävention von problematischem Substanzkonsum im Jugendalter und jungen Erwachsenenalter wird zudem die Erstellung eines Fragebogens zur individualisierten Erfassung von Risiko- und protektiven Faktoren empfohlen (Corrigan et al., 2007; Wittchen et al., 2008).

Für das weitere vertiefte Verständnis von entwicklungspsychopathologischen Faktoren und Verläufen bei Jugendlichen sind zusätzliche Studien von Interesse, speziell mit dem Fokus auf kompensatorische und protektive Faktoren. Das Mysterium, weshalb einige Heranwachsende unter ähnlichen Umständen erkranken und andere nicht, konnte somit auch durch diese Dissertation nicht abschliessend geklärt werden. Das übergeordnete Ziel der vorliegenden Dissertation, entwicklungs-psychopathologische Faktoren und Verläufe bei Heranwachsenden zu beleuchten und damit einen Beitrag zu einem besseren Verständnis der komplexen Entwicklung in der Adoleszenz zu leisten, kann jedoch als erfüllt betrachtet werden.

7.5. Literatur

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